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Risk prediction models for pediatric emergence delirium: a systematic review

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2
3 **Title:** Risk prediction models for pediatric emergence delirium: a systematic review
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3 **Abstract: (188 <300 words)**
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6 **Objectives and design:** Emergence delirium occurs in approximately 25% of pediatric general
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8 anesthetics and has significant adverse effects. The goal of the current systematic review was to
9
10 identify the existing literature investigating performance of predictive models for the
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12 development of pediatric emergence delirium following general anesthesia, and determine their
13
14 usability.
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17 **Setting:** Operating rooms and Post Anesthesia Care Units.
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20 **Participants:** Children undergoing general anesthesia.
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23 **Interventions:** Not applicable.
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26 **Outcomes:** Emergence delirium.

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28 **Results:** The current systematic review yielded 7938 abstracts, of which only 1 study detailing
29
30 the development and validation of the Emergence Agitation Risk Scale (EARS) met the
31
32 inclusion criteria. EARS had good discrimination with c-index of 0.81 (95% CI, 0.72-0.89).
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34 Calibration showed a non-significant Homer-Lemeshow goodness-of-fit test (P= 0.97). Although
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36 the EARS demonstrated low concern of applicability, the high risk of bias compromised the
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38 overall usability of this model.
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41 **Conclusions:** The current systematic review concluded that EARS has good discrimination
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43 performance but low usability to predict emergence delirium in a pediatric population. Further
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45 research is warranted to develop novel models for the prediction of emergence delirium in
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47 pediatric anesthesia.
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50 **Registration:** The protocol was registered in the PROSPERO registry (CRD42019141950).
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Strengths and limitations of this study

- This is a first systematic review of risk prediction models for pediatric emergence delirium and adheres to recommendations made in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.
- An extensive systematic literature search was conducted through 11 databases from their inception to May 17, 2019.
- These 11 databases were Medline(Ovid), PubMed, Embase (Ovid), Cochrane Database of Systematic Reviews (Ovid), Cochrane CENTRAL (Ovid), PsycINFO (Ovid), Scopus (Elsevier), Web of Science(Clarivate Analytics), ClinicalTrials.gov, International Clinical Trials Registry Platform, and ProQuest Digital Dissertations and Theses International.
- Inclusion criteria were studies of pediatric patients undergoing general anesthesia, investigating predictive models for emergence delirium and reporting discrimination and calibration characteristics.
- The current systematic review employed the Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies (CHARMS) for data extraction and the Prediction model study Risk of Bias Assessment Tool (PROBAST) which determines the usability of the prediction models identified in the systematic review.

Introduction:

Emergence delirium (ED) is a common complication occurring in approximately 25% of pediatric general anesthetics (GA)[1] and is associated with significant adverse effects including injury to the patient and personnel, damage to incision sites, exacerbated parental anxiety, and increased nursing requirements, further resulting in an increased burden on the healthcare system[2,3]. Identifying which patients are at highest risk for developing ED will allow practitioners to effectively apply multimodal prophylaxis in order to decrease the incidence of this significant complication.

Several risk factors have been identified for the development of ED, including age, preoperative anxiety, type of surgery, and type of anesthetic given[2,4]. Development of predictive scores which aim to integrate these risk factors to determine an individual's overall risk for developing ED has been attempted. However, no prior systematic review has been conducted to determine the usability of these prediction models.

The aim of the current study is to conduct a systematic review to identify all existing prediction models for the development of ED in a pediatric population, assess model performance and determine the usability of these models for use in clinical practice.

Methods:

The protocol for the current study was registered in the PROSPERO registry (CRD42019141950 available at https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=141950).

The results were reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols (PRISMA-P) 2015 statement[5].

Search strategy:

An information specialist with experience in systematic reviews searched 8 databases (Medline(Ovid), PubMed, Embase (Ovid), Cochrane Database of Systematic Reviews (Ovid), Cochrane CENTRAL (Ovid), PsycINFO (Ovid), Scopus (Elsevier) and Web of Science(Clarivate Analytics) starting from their inception. Furthermore, 3 databases were searched for relevant recently completed or ongoing research (ClinicalTrials.gov, International Clinical Trials Registry Platform, and ProQuest Digital Dissertations and Theses International. All searches were conducted on May 17, 2019. Search strategies were built to contain 3 sets of terms reflecting our search questions including the prediction models, the target condition (emergence delirium, emergence agitation), and the patient population (pediatric patients undergoing general anesthesia). Since emergence delirium and emergence agitation are sometimes used interchangeably in older literature, both these terms were included in our search strategy. In addition, reference lists of relevant trials and reviews were scanned. Refer to eAppendix 1 for search strategies for all databases.

Study selection and data extraction

Title, abstract and full text screening were independently conducted by 2 reviewers (SK, BS) with conflicts resolved by a third reviewer (MAP). Cohen's kappa was calculated to quantify the inter-rater reliability[6].

Inclusion criteria were: randomized controlled trials (RCT), cohort studies or case-control studies examining pediatric populations (<18 years old) undergoing general anesthesia investigating preoperative or intraoperative predictive models for the development of emergence delirium (ED) or emergence agitation (EA) in the post-anesthetic care unit (PACU). Inclusion and exclusion criteria are detailed in the eAppendix 2.

Study characteristics as well as primary and secondary outcomes data were extracted from relevant studies using a standardized data collection form in accordance to the Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies (CHARMS) framework[7] and the Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis (TRIPOD) checklist[8]. These included demographic information, anesthetic characteristics (type and dosages of anesthetic used for induction and maintenance, use and dosage of premedication); type of scale used (components, model development methodology, model evaluation methodology, time span of prediction, and intended moment for the use of the model), discrimination characteristics (area under receiver operating curve (AUC) or corresponding c-statistic with 95% confidence interval) and calibration characteristics (calibration plots, ratio between predicted vs observed incidence of emergence delirium, or Hosmer-Lemeshow goodness-of-fit statistic).

Assessment of methodologic quality

The methodological quality of the evidence was determined using the Prediction model study Risk Of Bias Assessment Tool (PROBAST) framework.[9] This consists of first determining the usability of the risk prediction model based on the risk of bias and concerns of applicability across 4 domains (participants, predictors, outcome and analysis) followed by a determination of the model's predictive performance (discrimination and calibration)[9]. The model was considered to be "usable" if it had a low risk of bias, low concern about applicability, and good predictive performance of discrimination and calibration. Good discrimination is defined as $AUC \geq 0.8$ [10,11].

Software

References were collected and de-duplicated using Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia).

Results:

Search results

The literature search yielded 7,938 citations, which, following title, abstract and full-text screening, yielded 1 study that met the inclusion criteria. The PRISMA flow diagram is shown in Figure 1. Four full-text articles were excluded due to irrelevant populations[12], model being applied post-operatively[13] and lack of reported discrimination or calibration data[4,14] (eTable 1). The eligible paper investigated the development and validation of the Emergence Agitation Risk Scale (EARS).[15] Cohen's kappa showed good agreement between the two reviewers (kappa = 0.99).

The EARS

The included study, published in 2017, was a Japanese, single-center, pediatric hospital-based study detailing the development and validation of the Emergence Agitation Risk Scale (EARS). It comprised a total of 220 patients ASA class I or II patients with mean ages 4.1 ± 1.8 years and undergoing minor surgery including tonsillectomy, adenoidectomy, myringotomy tube insertion, strabismus surgery, cryptorchidism repair and inguinal hernia repair under general anesthesia. Anesthetic induction consisted of sevoflurane and nitrous oxide inhalation without premedication while maintenance was achieved with sevoflurane. Analgesia consisted of intravenous fentanyl, acetaminophen suppository and nerve blocks wherever indicated. The outcome of interest, EA, was measured in the PACU using the Pediatric Anesthesia Emergence Delirium (PAED) scale with a cutoff of >12 and had an overall incidence of 36.4%. Study characteristics are detailed in Table 1.

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3 Development of EARS was conducted retrospectively in a cohort of 120 patients previously
4 enrolled in an RCT investigating the use of acupuncture in the prevention of emergence agitation
5 in children.[16] Logistic regression was used to test the ten candidate predictors including age,
6 height, weight, sex, Pediatric Anesthesia Behaviour (PAB) score, operative procedure, anesthesia
7 time, airway securing device (ETT or LMA), presence or absence of nerve block use, and total
8 fentanyl dose. The Akaike information criterion stepwise selection was used to identify 4
9 independently associated predictors for final inclusion in the EARS (age, PAB score, anesthesia
10 time and operative procedure). β -Coefficients were calculated and converted to integer scores for
11 each predictor, yielding a score range of 1 to 23.
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24 The validation phase of the score was conducted separately in a prospective observational cohort
25 of 100 patients.
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28 29 30 *Study findings*

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32 The development phase study population had mean age 3.7 ± 1.7 years and incidence of EA of
33 34.2%. The c-statistic was 0.84 (95% CI 0.74-0.94) and Hosmer-Lemeshow statistic was
34 nonsignificant ($p = 0.97$), indicating adequate discrimination and calibration, respectively.
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40 The validation phase study population had mean age 4.5 ± 1.9 years and EA incidence of 39%.
41 The c-statistic for the validation phase was 0.81 (95% CI 0.72-0.89). The optimum cutoff point
42 was found to be 11, yielding 87% sensitivity and 61% specificity for the development of ED.
43 The grey zone, delimited by the points of the scale where the sensitivity and specificity become
44 90%, was 10 to 13 and comprised 38% of patients. Calibration data was not reported for the
45 validation phase.
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53 54 55 *Score usability*

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3 Usability analysis based on PROBAST criteria, revealed low concern of applicability across all 3
4 domains probed (participants, predictors, outcomes). However, there was a high risk of bias,
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6 primarily due to deficits in the analysis domain. In particular, the number of events (n=41) per
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8 candidate predictor (n=10) during the development phase was 4.1 (at least 10 and preferably 20
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10 would be considered adequate). Furthermore, during the validation phase the population size was
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12 inadequate, yielding only 39 patients experiencing the primary outcome, which fell short of the
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14 recommended 100 patients experiencing the outcome of interest. The authors did not present a
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16 calibration plot to illustrate the goodness-of-fit associated with the statistically significant
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18 Hosmer-Lemeshow statistic. And lastly, the authors did not account for overfitting and optimism
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20 in the context of the small events per candidate predictor. (eTable 2)
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27 Taken together, given the good discrimination performance but insufficient calibration
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29 evaluation, as well as the high risk of bias despite a low concern of applicability of the model to
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31 pediatric populations for predicting EA, the EARS was given a designation of low “usability”
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33 (Table 2).
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Discussion:

The current systematic review revealed only one scale targeted at predicting the risk of developing emergence delirium in children. The PROBAST assessment of usability indicated that the discriminative performance and applicability of the scale were both good, but insufficient calibration evaluation and deficiencies in the analysis placed the scale at high risk of bias, reducing its overall usability.

Of the four studies excluded in the full-text assessment phase of our systematic review, three may be particularly instructive in future research and quality improvement studies. The Perioperative Adult Child Behavioral Interaction Scale (PACBIS) attempted to use child, parental, and perioperative staff behaviour to predict the risk of emergence delirium[13]. The scale included elements such as child coping and distress as well as the promotion of coping and distress by parents and staff, each graded on a Likert Scale. While the scale showed good correlation with emergence delirium scores, the authors did not indicate which ED score was used and reported no discrimination or calibration data, which limits the usability of the scale. Similarly, a second study documented the development and validation of the Pediatric Anesthesia Behaviour score[14]. While there was a statistically significant correlation between PAB score and the PAED score, predictive characteristics were once again not reported, limiting the usability of the scale. Interestingly, the PAB score is one of the variables included in the EARS alongside other patient and surgical characteristics in the prediction of the development of EA. Lastly, a study by Kain et al (2004) showed that while the modified Yale Preoperative Anxiety Scale (mY-PAS) scores correlated with ED, the authors did not report performance characteristics[4]. Discrimination and calibration characteristics are essential features in the assessment of the usability of a predictive scale. Discrimination values such as the area under the

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3 receiver operating curve or the C-statistic indicate how well a model differentiates those patients
4 who are likely to develop a condition in comparison to those who are not likely to develop a
5 condition. Calibration, on the other hand, as measured by a visual representation of the
6 relationship between observe and predicted values and by the Hosmer-Lemeshow statistic, is a
7 measure of the scale's ability to predict the absolute risk of developing the endpoint in question.
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11 To date, this has been the only systematic review looking at prediction scales of ED in a pediatric
12 population. The review was extensive, including 8 major databases of peer-reviewed literature as
13 well as 3 databases of protocols, with the search including both emergence delirium as well as
14 emergence agitation, which have been interchangeably used in previous literature. The study
15 protocol was published in the PROSPERO database before the start of the review. The review
16 processed used rigorous methodology, employing 2 independent reviewers and careful adherence
17 to the PRISMA[5], CHARMS[7], TRIPOD[8] and PROBAST[9] guidelines for systematic
18 reviews and prediction scales. While the scale was found to have low usability, the current study
19 highlights potential required improvements in the methodology of future studies validating the
20 EARS, with problems arising from high risk of bias due to the analysis phase. Particular
21 attention should be given to the number of events per variable to avoid the risk of over- and
22 under-fitting of the model.
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43 A considerable limitation of the current review was that only 1 study investigating a single
44 predictive model was found, which met all the inclusion criteria. While this hampered our ability
45 to run a meta-analysis on the predictive properties of the scale, a need for further validation in
46 other settings is underscored, as is the need for the development of other scales in this domain.
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52 The current systematic review highlights several potential clinical and research implications. The
53 first is the need to identify validated risk factors for ED based on prior research, which can then
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3 be used to generate new prediction models using prospective cohort methodology to accurately
4 and precisely identify those patients at the highest risk for developing this side effect.
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6 Furthermore, the results of this study indicate that future scale development and validation
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8 should include a systematic assessment of the predictive properties of such scales. Indeed,
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10 following the analytic guidance provided by the PROBAST guidelines would ensure the analytic
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12 rigor required to incorporate these scores into clinical practice. Such scales could then be
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14 implemented in quality improvement projects targeting prophylaxis and treatment of emergence
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16 delirium as well as cost-benefit analyses to determine the applicability and acceptability of such
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18 scales into clinical practice.
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24 In conclusion, the current systematic review has revealed a single study of predictive scores for
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26 the development of pediatric emergence delirium. While this score showed low usability, our
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28 results do highlight the need for the development of more such scales as well as the requirement
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30 for methodologically rigorous validation of such scores.
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Competing interests:

All authors have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years, no other relationships or activities that could appear to have influenced the submitted work.

Contributions to authorship:

MAP, BS, SK, ME and KA: Study concept, protocol writing and registration, analysis and interpretation of the data, drafting of manuscript, manuscript revision, approval of final version.

NG and AP: Study concept, protocol writing, manuscript revision, approval of final version.

Ethics approval:

Not required given nature of the study design.

Patient and public involvement:

It was not appropriate, possible or necessary to involve patients or the public in the design or conduct of this study, or to disseminate the results to them.

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Data sharing statement:

All data of the current study is present in the main manuscript, figures, tables and online only supplemental material.

For peer review only

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References:

- 1 Ortiz AC, Atallah AN, Matos D, *et al.* Intravenous versus inhalational anaesthesia for paediatric outpatient surgery. *Cochrane database Syst Rev* 2014;**2**:CD009015.
doi:10.1002/14651858.CD009015.pub2
- 2 Voepel-Lewis T, Malviya S, Tait AR. A prospective cohort study of emergence agitation in the pediatric postanesthesia care unit. *Anesth Analg* 2003;**96**:1625–30.
doi:10.1213/01.ANE.0000062522.21048.61
- 3 Vljakovic GP, Sindjelic RP. Emergence delirium in children: Many questions, few answers. *Anesth Analg* 2007;**104**:84–91. doi:10.1213/01.ane.0000250914.91881.a8
- 4 Kain ZN, Caldwell-Andrews AA, Maranets I, *et al.* Preoperative anxiety and emergence delirium and postoperative maladaptive behaviors. *Anesth Analg* 2004;**99**:1648–54.
doi:10.1213/01.ANE.0000136471.36680.97
- 5 Moher D, Shamseer L, Clarke M, *et al.* Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;**4**:1.
doi:10.1186/2046-4053-4-1
- 6 O'Connor D, Green S, Higgins JP. Defining the Review Question and Developing Criteria for Including Studies. In: *Cochrane Handbook for Systematic Reviews of Interventions: Cochrane Book Series*. 2008. 81–94. doi:10.1002/9780470712184.ch5
- 7 Moons KGM, de Groot JAH, Bouwmeester W, *et al.* Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies: The CHARMS Checklist. *PLoS Med* 2014;**11**. doi:10.1371/journal.pmed.1001744

- 1
2
3 8 Collins GS, Reitsma JB, Altman DG, *et al.* Transparent reporting of a multivariable
4 prediction model for individual prognosis or diagnosis (TRIPOD): The TRIPOD
5 Statement. *Eur Urol* 2015;**67**:1142–51. doi:10.1016/j.eururo.2014.11.025
6
7
8
9
10
11 9 Moons KGM, Wolff RF, Riley RD, *et al.* PROBAST : A Tool to Assess Risk of Bias and
12 Applicability of Prediction Model Studies : Explanation and Elaboration. *Ann Intern Med*
13 2019;**170**:W1-33. doi:10.7326/M18-1377
14
15
16
17
18 10 Aoyama K, D’Souza R, Pinto R, *et al.* Risk prediction models for maternal mortality: A
19 systematic review and meta-analysis. *PLoS One* 2018;**13**:e0208563.
20
21 doi:10.1371/journal.pone.0208563
22
23
24
25
26 11 Hosmer DW, Lemeshow S, Sturdivant RX. Assessing the Fit of the Model. In: *Applied*
27 *Logistic Regression, 3rd Edition*. Hoboken, NJ, USA: : John Wiley & Sons 2013. 153 –
28 225.
29
30
31
32
33 12 Oh SH, Park EJ, Jin Y, *et al.* Automatic delirium prediction system in a Korean surgical
34 intensive care unit. *Nurs Crit Care* 2014;**19**:281–91. doi:10.1111/nicc.12048
35
36
37
38 13 Sadhasivam S, Cohen LL, Szabova A, *et al.* Real-time assessment of perioperative
39 behaviors and prediction of perioperative outcomes. *Anesth Analg* 2009;**108**:822–6.
40
41 doi:10.1213/ane.0b013e318195c115
42
43
44
45
46 14 Beringer RM, Greenwood R, Kilpatrick N. Development and validation of the Pediatric
47 Anesthesia Behavior score - An objective measure of behavior during induction of
48 anesthesia. *Paediatr Anaesth* 2014;**24**:196–200. doi:10.1111/pan.12259
49
50
51
52
53 15 Hino M, Mihara T, Miyazaki S, *et al.* Development and Validation of a Risk Scale for
54
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1
2
3 Emergence Agitation after General Anesthesia in Children: A Prospective Observational
4 Study. *Anesth Analg* 2017;**125**:550–5. doi:10.1213/ANE.0000000000002126
5
6
7

- 8
9 16 Hijikata T, Mihara T, Nakamura N, *et al.* Electrical stimulation of the heart 7 acupuncture
10 site for preventing emergence agitation in children. *Eur J Anaesthesiol* 2016;**33**:535–42.
11
12 doi:10.1097/EJA.0000000000000379
13
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Tables:**Table 1.** Summary characteristics of studies included in systematic review.

Study	Score name and composition	Population	Inclusion & exclusion criteria	Anesthetic type	Outcome definition	Model development & validation	Model Performance
Hino et al, 2017	Emergence agitation risk scale (EARS): 1. Age 2. Operative procedure (strabismus surgery, tonsillectomy) 3. Preoperative behaviour score 4. Anesthesia time	N = 220 (120 during development and 100 during validation phases)	<u>Inclusion criteria:</u> 1.5–8 years old; ASA 1-2; undergoing general anesthesia for inguinal hernia repair, adenoidectomy, tonsillectomy, strabismus repair, tympanostomy tube, cryptorchidism, and other minor surgery <u>Exclusion criteria:</u> mental retardation; taking psychotropic drugs	Induction with N ₂ O and sevoflurane, maintenance with sevoflurane Analgesia with intravenous fentanyl and suppository acetaminophen, and nerve block where appropriate	PAED score > 12 as assessed by trained nurse or anesthesiologist in PACU <u>Incidence:</u> 34.2% of patients in the development phase 39% of patients in the validation phase	<u>Development phase:</u> 1. Data from prior randomized controlled trial 2. Multicollinearity between 10 candidate predictors: age, height, weight, sex, operative procedures (tonsillectomy, strabismus surgery, other), airway management (ETT, LMA), nerve block, fentanyl dose, anesthesia time, PAB score 3. Multivariate logistic regression with Akaike information criterion stepwise selection conducted to determine the optimal combination of 7 remaining predictors (age, sex, operative procedure, airway management, anesthesia time, PAB score) 4. Beta-coefficient was calculated for each predictor <u>Validation phase:</u> 1. Prospective cohort data. 2. Best cut-off point determined by Youden index 3. Gray zone identified as range between the two points on receiver operating curve where sensitivity and specificity are 90%	<u>Development phase:</u> Discrimination: C-index 0.84 (95% CI, 0.74-0.94) Calibration: Hosmer-Lemeshow goodness-of-fit test nonsignificant (p= 0.97) <u>Validation phase:</u> Discrimination: C-index 0.84 (95% CI, 0.74-0.94)

ASA, American Society of Anesthesiologists

CI, confidence interval

EARS, Emergence Agitation Risk Scale

ETT, endotracheal tube

LMA, laryngeal mask airway

PAB, Pediatric Anesthesia Behaviour Scale

PACU, post-anesthesia care unit

PAED, Pediatric Anesthesia Emergence Delirium scale

Table 2. Prediction model usability assessment.

Study	Predictive performance		Risk of bias	Applicability	Usability
	Discrimination	Calibration			
Hino et al, 2017 EARS model	<u>Development:</u> C-index 0.84 (95% CI 0.74-0.94) <u>Validation:</u> C-index 0.81 (95% CI 0.72-0.89)	<u>Development:</u> Hosmer-Lemeshow p=0.97 <u>Validation:</u> Not reported	Overall high concern	Overall low concern	Low

CI, confidence interval

EARS, Emergence Agitation Risk Scale

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Figure legends:

Figure 1. PRISMA flow diagram for search and review strategy.

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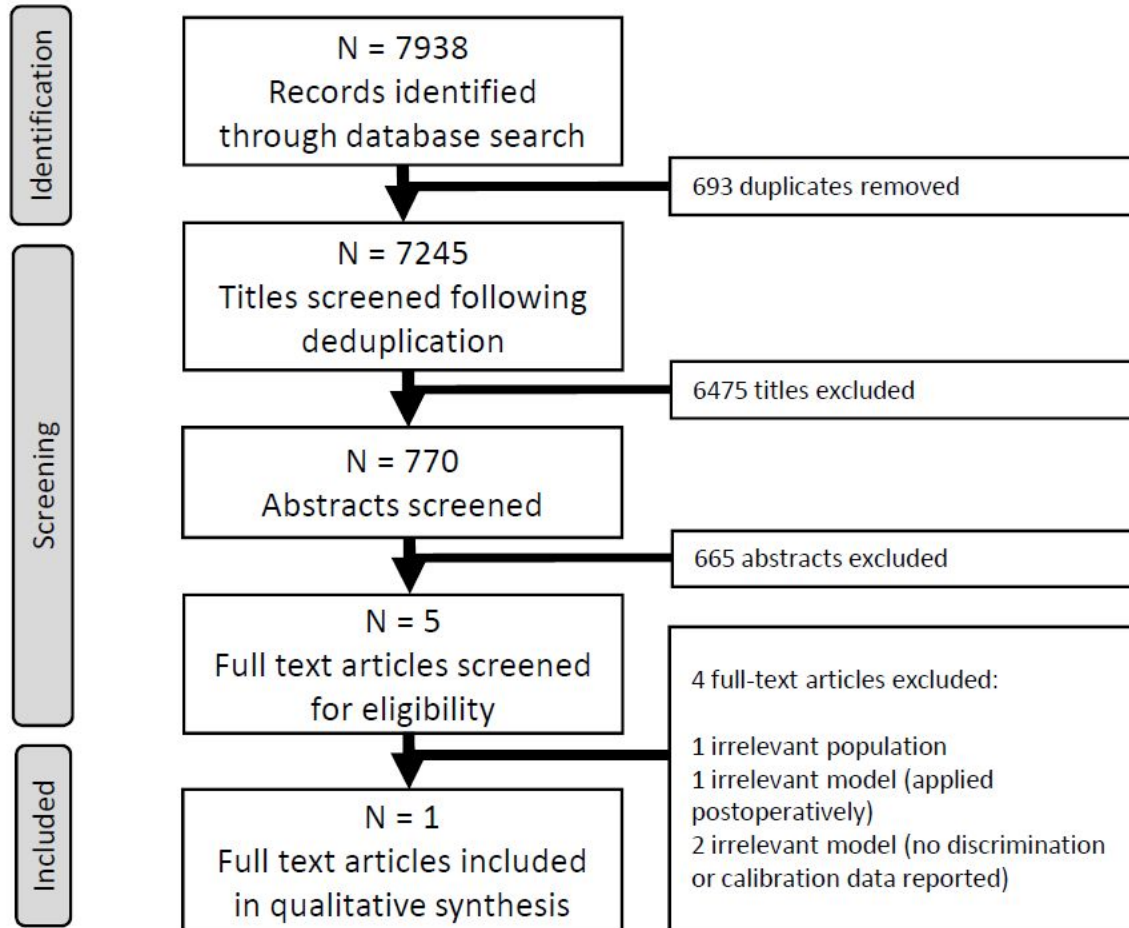
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7 **eTable 1.** Detailed explanations for studies excluded following full-text assessment.
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9 **eTable 2.** PROBAST risk of bias and applicability assessment.
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11 **eAppendix 1.** Search strategies for each database.
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13 **eAppendix 2.** Summary of inclusion and exclusion criteria.
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eTable 1. Detailed explanations for studies excluded following full-text assessment.

Study reference	Journal	Reason for exclusion
Beringer et al, 2014	Paediatr. Anaesth.	Irrelevant model (no discrimination or calibration data reported)
Kain et al, 2004	Anesth. Analg.	Irrelevant model (no discrimination or calibration data reported)
Oh et al, 2014	Nurs. Crit. Care	Irrelevant population
Sadhasivam et al, 2009	Anesth. Analg.	Irrelevant model (applied postoperatively)

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eTable 2. PROBAST risk of bias and applicability assessment.

Study	Hino et al, 2017 – EARS Model		
	Assessment	Judgement	Justification
Domain 1: Participant selection	Risk of Bias	Low concern	Data for the development phase were obtained from a previous randomized control trial while the validation phase was conducted in a prospective cohort study. Inclusion criteria were age 1.5-8 years, ASA I or II, patients without mental retardation, patients not taking psychotropic drugs, patients undergoing minor surgery and patients without premedication
	Applicability	Low concern	Included participants and setting are relevant to review question.
Domain 2: Predictors	Risk of Bias	Unclear	The score for all 4 predictors can reasonably be assumed to be determined before the outcome event and measurement. Whether predictor measurements were blinded to outcome occurrence is not stated.
	Applicability	Low concern	Predictor definition, assessment and timing are similar to review question.
Domain 3: Outcome	Risk of Bias	Unclear	No information is provided with regards to whether predictor information was known when determining the incidence of ED.
	Applicability	Low concern	PAED score used to determine the outcome is similar to review question
Domain 4: Analysis	Risk of Bias	High concern	Events per candidate variable = 4.1 In development phase, univariable comparisons for 10 candidate predictors was performed between those who were diagnosed with EA (n = 4.1) vs those who were not. Although subsequent assessment of multicollinearity reduced the number of predictors (highly correlated predictors were grouped), no predictors were eliminated in the univariable comparison and were then assessed via multivariate analysis. Only the p value for the Hosmer-Lemeshow goodness-of-fit test was provided without a calibration plot or table Although there was no examination of overfitting and optimism in model performance, this study quantified the model's predictive performance on both the data that was used to develop the model but also on a totally different external cohort. The final model appears to be based only on a selection of predictors from the multivariable regression analysis without refitting the smaller model.
Overall Judgement	Applicability	Low concern	
	Risk of Bias	High concern	

ASA, American Society of Anesthesiologists

CI, confidence interval

EA, emergence agitation

EARS, Emergence Agitation Risk Scale

eAppendix 1. Search strategies for each database.**Medline**

Ovid MEDLINE(R) 1946 to May 16, 2019

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	117
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	2167
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	3800
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	821
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	6626
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	8850
7	Anxiety/ci, de	2201
8	(emergence adj10 agitat*).mp.	321
9	(post?an?esthetic adj3 agitat*).mp.	10
10	(recovery adj10 agitat*).mp.	231
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	3562
12	(agitat* adj8 emergence).mp.	314
13	(emergence adj8 excitement?).mp.	22

14	(postan?esthe* adj8 excitement?).mp.	9
15	(post-an?esthe* adj8 excitement?).mp.	1
16	(postop* adj3 agitat*).mp.	146
17	(post-op* adj3 agitat*).mp.	11
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	12
21	(post-anesth* adj3 agitat*).mp.	3
22	(postanaesth* adj3 agitat*).mp.	5
23	(post-anaesth* adj3 agitat*).mp.	3
24	or/1-23 [Emergence Delirium & related terms]	24607
25	exp Infant/	1096466
26	exp Child/	1827951
27	exp Adolescent/	1932495
28	Child, Preschool/	879443
29	Adolescent Health Services/	5340
30	Adolescent Health/	780
31	Adolescent Medicine/	1498
32	Adolescent, Hospitalized/	431
33	Adolescent, Institutionalized/	126
34	Child, Hospitalized/	6427
35	Child, Institutionalized/	1853
36	exp Child Care/	18827

37	exp Child Health Services/	23209
38	exp Child Welfare/	30091
39	exp Infant Welfare/	2733
40	exp Maternal Health Services/	45957
41	exp Maternal Welfare/	6518
42	exp Maternal-Child Health Centers/	2295
43	exp Maternal-Child Nursing/	5686
44	exp Pediatrics/	55220
45	Neonatology/	2614
46	Perinatology/	1751
47	Schools, Nursery/	1450
48	"early intervention (education)"/	2756
49	(boy or boys).tw.	121514
50	(girl or girls).tw.	124129
51	(gradeschool* or grade school*).mp.	700
52	(highschool* or high school*).mp.	24966
53	(kid or kids).tw.	6041
54	(minor or minors).tw.	190909
55	(youth?? or youths?).mp.	59422
56	adolescen*.tw,hw,kw.	1963413
57	babies.jw.	0
58	babies.mp.	31842
59	baby*.jw.	1

60	baby*.mp.	34419
61	(child or childhood* or children*).tw,kw,hw.	2155171
62	elementary school*.mp.	7958
63	infanc*.jw.	293
64	infanc*.mp.	58220
65	infant*.jw.	7151
66	infant*.mp.	1180849
67	junior high*.mp.	2187
68	juvenile?.tw.	67839
69	kindergarten*.mp.	5162
70	middle school*.mp.	4323
71	neonat*.jw.	24610
72	neonat*.mp.	253352
73	neo-nat*.mp.	770
74	newborn*.jw.	0
75	newborn*.mp.	720054
76	new-born*.mp.	3761
77	nursery school*.mp.	1005
78	paediatr*.jw.	54794
79	paediatr*.mp.	52640
80	pediatr*.jw.	453821
81	pediatr*.mp.	283982
82	perinatal*.mp.	65985

83	peri-natal*.mp.	196
84	preadoles*.mp.	2681
85	pre-adoles*.mp.	934
86	premie.mp.	20
87	premies.mp.	17
88	premmie?.mp.	2
89	preschool*.mp.	881919
90	pre-school*.mp.	4304
91	schoolage*.mp.	64
92	schoolchild*.mp.	12228
93	senior high*.mp.	898
94	stepchild*.mp.	217
95	teen*.tw.	25318
96	toddler?.mp.	8178
97	weanling?.mp.	6636
98	or/25-97 [Children & related terms]	4167868
99	24 and 98 [Emergence Delirium + Children]	6074
100	"Healthcare Failure Mode and Effect Analysis"/	72
101	exp "Outcome and Process Assessment (Health Care)"/	1028066
102	"Predictive Value of Tests"/	190727
103	"Severity of Illness Index"/	227030
104	"Sensitivity and Specificity"/	335901
105	Actuarial Analysis/	6702

106	Adverse Outcome Pathways/	44
107	Algorithms/	236532
108	Apache/	5875
109	Area Under Curve/	37680
110	Bayes Theorem/	30560
111	Behavioral Risk Factor Surveillance System/	1875
112	Biostatistics/	1782
113	Calibration/	36307
114	Cluster Analysis/	58885
115	Critical Pathways/	6263
116	Data Interpretation, Statistical/	55040
117	Decision Support Techniques/	18752
118	Decision Theory/	910
119	Discriminant Analysis/	10006
120	Disease-Free Survival/	69123
121	Evaluation Studies as Topic/	121389
122	Evaluation Studies/	243149
123	exp Benchmarking/	12569
124	exp Decision Trees/	10548
125	exp Health Status Indicators/	285452
126	Factor Analysis, Statistical/	26405
127	Failure to Rescue, Health Care/	70
128	Forecasting/	81951

129	Kaplan-Meier Estimate/	60623
130	Karnofsky Performance Status/	2406
131	Life Tables/	6369
132	Likelihood Functions/	21158
133	Linear Models/	76683
134	Logistic Models/	130104
135	Markov Chains/	13386
136	Matched-Pair Analysis/	4702
137	Medical Futility/	2798
138	Models, Statistical/	87027
139	Monte Carlo Method/	26691
140	Nomograms/	2725
141	Odds Ratio/	85830
142	Organ Dysfunction Scores/	867
143	Patient Acuity/	902
144	Position-Specific Scoring Matrices/	482
145	Pregnancy Outcome/	47483
146	Principal Component Analysis/	23679
147	Probability/	54700
148	Program Evaluation/	59437
149	Progression-Free Survival/	765
150	Propensity Score/	6862
151	Proportional Hazards Models/	72481

152	Protective Factors/	3143
153	Quality-Adjusted Life Years/	11008
154	Regression Analysis/	125963
155	Reproducibility of Results/	375634
156	Risk Assessment/	241666
157	Risk Factors/	767032
158	Risk/	118662
159	Roc Curve/	52023
160	Sickness Impact Profile/	7026
161	Signal-To-Noise Ratio/	6677
162	Simplified Acute Physiology Score/	52
163	Survival Analysis/	126948
164	Survival Rate/	161964
165	Survival/	4586
166	Uncertainty/	11135
167	Validation Studies As Topic/	2013
168	Validation Studies/	94899
169	"near miss??" .mp.	1777
170	"acute physiology and chronic health evaluat*" .mp.	4052
171	(adverse outcome? adj (index?? or indices)).mp.	19
172	(bivariat* adj3 Gompertz*).mp.	1
173	(critical adj2 (path or paths or pathway or pathways)).mp.	10410
174	(decision adj2 tree?).mp.	13977

175	(decision? adj2 aid?).mp.	4002
176	(decision? adj2 analy*).mp.	8868
177	(decision? adj2 model*).mp.	7502
178	(decision? adj2 techni*).mp.	19420
179	(logistic* adj2 model*).mp.	163493
180	(logistic* adj2 regression*).mp.	213519
181	(multivariab* adj3 Gompertz*).mp.	2
182	(prediction adj1 (model or tool or rule)).mp.	9728
183	(predictive adj1 (value of tests or model)).mp.	196685
184	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	16056
185	(prognostic* adj2 strateg*).mp.	184
186	receiver operating characteristic?.mp.	48350
187	(regression adj analy*).mp.	307106
188	(risk adj1 calculat*).mp.	2931
189	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	292497
190	(roc adj2 curve?).mp.	64491
191	(validation or discrimination or calibration).mp.	383952
192	algorhythm*.mp.	109
193	algorism*.mp.	52
194	algorithm*.mp.	303614
195	APACHE.mp.	9770
196	Bayesian.mp.	32551
197	bench mark*.mp.	274

198	benchmark*.mp.	32715
199	"c-index?".mp.	1965
200	"c-statistic?".mp.	4333
201	Charlson.mp.	6038
202	(comorbid* adj2 (index* or indices)).mp.	5581
203	(co-morbid* adj2 (index* or indices)).mp.	390
204	"concordance statistic?".mp.	165
205	(Cox adj2 model*).mp.	18279
206	decision tree?.mp.	13900
207	Elixhauser.mp.	336
208	flow chart?.mp.	1209
209	flowchart?.mp.	907
210	"goodness of fit".mp.	6113
211	hazard* model*.mp.	88073
212	hazard* ratio?.mp.	84520
213	"HL test*3".mp.	43
214	"Hosmer-Lemeshow*".mp.	1483
215	Kaplan Meier*.mp.	95791
216	log-rank test???.mp.	17574
217	median survival time?.mp.	11394
218	MODS.mp.	1583
219	mortality index???.mp.	271
220	mortality indices.mp.	113

221	MPM.mp.	2364
222	predict*.mp.	1273785
223	prognostic model*.mp.	3288
224	propensity scor*3.mp.	15045
225	random-effect* model*.mp.	18284
226	risk ratio?.mp.	19025
227	SAPS.mp.	2482
228	SOFA.mp.	2320
229	or/100-228 [Prediction Models & related terms]	4938313
230	99 and 229 [Emergence Delirium + Children + Prediction]	2012
231	limit 230 to "humans only (removes records about animals)"	1975
232	limit 231 to ("all adult (19 plus years)" or "young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)")	1104
233	limit 231 to pregnancy	267
234	232 or 233	1183
235	231 not 234	792
236	limit 231 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)")	1710
237	235 or 236	1765
238	limit 231 to children	1875
239	237 or 238	1894
240	remove duplicates from 239	1893

Medline In-Process

Ovid MEDLINE(R) Epub Ahead of Print and In-Process & Other Non-Indexed Citations May 16, 2019

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	0
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
7	Anxiety/ci, de	0
8	(emergence adj10 agitat*).mp.	109
9	(post?an?esthetic adj3 agitat*).mp.	2
10	(recovery adj10 agitat*).mp.	56
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	719
12	(agitat* adj8 emergence).mp.	107
13	(emergence adj8 excitement?).mp.	4
14	(postan?esthe* adj8 excitement?).mp.	0

15	(post-an?esthe* adj8 excitement?).mp.	0
16	(postop* adj3 agitat*).mp.	41
17	(post-op* adj3 agitat*).mp.	10
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	5
21	(post-anesth* adj3 agitat*).mp.	2
22	(postanaesth* adj3 agitat*).mp.	0
23	(post-anaesth* adj3 agitat*).mp.	0
24	or/1-23 [Emergence Delirium & related terms]	850
25	exp Infant/	0
26	exp Child/	0
27	exp Adolescent/	0
28	Child, Preschool/	0
29	Adolescent Health Services/	0
30	Adolescent Health/	0
31	Adolescent Medicine/	0
32	Adolescent, Hospitalized/	0
33	Adolescent, Institutionalized/	0
34	Child, Hospitalized/	0
35	Child, Institutionalized/	0
36	exp Child Care/	0
37	exp Child Health Services/	0

38	exp Child Welfare/	0
39	exp Infant Welfare/	0
40	exp Maternal Health Services/	0
41	exp Maternal Welfare/	0
42	exp Maternal-Child Health Centers/	0
43	exp Maternal-Child Nursing/	0
44	exp Pediatrics/	0
45	Neonatology/	0
46	Perinatology/	0
47	Schools, Nursery/	0
48	"early intervention (education)"/	0
49	(boy or boys).tw.	13901
50	(girl or girls).tw.	14303
51	(gradeschool* or grade school*).mp.	72
52	(highschool* or high school*).mp.	4702
53	(kid or kids).tw.	1047
54	(minor or minors).tw.	23163
55	(youth?? or youths?).mp.	12161
56	adolescen*.tw,hw,kw.	36625
57	babies.jw.	0
58	babies.mp.	3149
59	baby*.jw.	0
60	baby*.mp.	4210

61	(child or childhood* or children*).tw,kw,hw.	130111
62	elementary school*.mp.	1324
63	infanc*.jw.	141
64	infanc*.mp.	5328
65	infant*.jw.	1016
66	infant*.mp.	32765
67	junior high*.mp.	256
68	juvenile?.tw.	8626
69	kindergarten*.mp.	960
70	middle school*.mp.	949
71	neonat*.jw.	3009
72	neonat*.mp.	21656
73	neo-nat*.mp.	32
74	newborn*.jw.	17
75	newborn*.mp.	11187
76	new-born*.mp.	503
77	nursery school*.mp.	63
78	paediatr*.jw.	6103
79	paediatr*.mp.	8690
80	pediatr*.jw.	30288
81	pediatr*.mp.	37343
82	perinatal*.mp.	6453
83	peri-natal*.mp.	21

84	preadoles*.mp.	305
85	pre-adoles*.mp.	144
86	premie.mp.	1
87	premies.mp.	1
88	premmie?.mp.	0
89	preschool*.mp.	3563
90	pre-school*.mp.	440
91	schoolage*.mp.	7
92	schoolchild*.mp.	971
93	senior high*.mp.	115
94	stepchild*.mp.	38
95	teen*.tw.	3191
96	toddler?.mp.	1464
97	weanling?.mp.	278
98	or/25-97 [Children & related terms]	265209
99	24 and 98 [Emergence Delirium + Children]	154
100	"Healthcare Failure Mode and Effect Analysis"/	0
101	exp "Outcome and Process Assessment (Health Care)"/	0
102	"Predictive Value of Tests"/	0
103	"Severity of Illness Index"/	0
104	"Sensitivity and Specificity"/	0
105	Actuarial Analysis/	0
106	Adverse Outcome Pathways/	0

107	Algorithms/	0
108	Apache/	0
109	Area Under Curve/	0
110	Bayes Theorem/	0
111	Behavioral Risk Factor Surveillance System/	0
112	Biostatistics/	0
113	Calibration/	0
114	Cluster Analysis/	0
115	Critical Pathways/	0
116	Data Interpretation, Statistical/	0
117	Decision Support Techniques/	0
118	Decision Theory/	0
119	Discriminant Analysis/	0
120	Disease-Free Survival/	0
121	Evaluation Studies as Topic/	0
122	Evaluation Studies/	26
123	exp Benchmarking/	0
124	exp Decision Trees/	0
125	exp Health Status Indicators/	0
126	Factor Analysis, Statistical/	0
127	Failure to Rescue, Health Care/	0
128	Forecasting/	0
129	Kaplan-Meier Estimate/	0

130	Karnofsky Performance Status/	0
131	Life Tables/	0
132	Likelihood Functions/	0
133	Linear Models/	0
134	Logistic Models/	0
135	Markov Chains/	0
136	Matched-Pair Analysis/	0
137	Medical Futility/	0
138	Models, Statistical/	0
139	Monte Carlo Method/	0
140	Nomograms/	0
141	Odds Ratio/	0
142	Organ Dysfunction Scores/	0
143	Patient Acuity/	0
144	Position-Specific Scoring Matrices/	0
145	Pregnancy Outcome/	0
146	Principal Component Analysis/	0
147	Probability/	0
148	Program Evaluation/	0
149	Progression-Free Survival/	0
150	Propensity Score/	0
151	Proportional Hazards Models/	0
152	Protective Factors/	0

153	Quality-Adjusted Life Years/	0
154	Regression Analysis/	0
155	Reproducibility of Results/	0
156	Risk Assessment/	0
157	Risk Factors/	0
158	Risk/	0
159	Roc Curve/	0
160	Sickness Impact Profile/	0
161	Signal-To-Noise Ratio/	0
162	Simplified Acute Physiology Score/	0
163	Survival Analysis/	0
164	Survival Rate/	0
165	Survival/	0
166	Uncertainty/	0
167	Validation Studies As Topic/	0
168	Validation Studies/	0
169	"near miss??" .mp.	303
170	"acute physiology and chronic health evaluat*" .mp.	571
171	(adverse outcome? adj (index?? or indices)).mp.	4
172	(bivariat* adj3 Gompertz*) .mp.	0
173	(critical adj2 (path or paths or pathway or pathways)).mp.	714
174	(decision adj2 tree?) .mp.	1448
175	(decision? adj2 aid?) .mp.	883

176	(decision? adj2 analy*).mp.	1444
177	(decision? adj2 model*).mp.	1364
178	(decision? adj2 techni*).mp.	229
179	(logistic* adj2 model*).mp.	9769
180	(logistic* adj2 regression*).mp.	38115
181	(multivariab* adj3 Gompertz*).mp.	0
182	(prediction adj1 (model or tool or rule)).mp.	2833
183	(predictive adj1 (value of tests or model)).mp.	1940
184	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	2913
185	(prognostic* adj2 strateg*).mp.	37
186	receiver operating characteristic?.mp.	10334
187	(regression adj analy*).mp.	34092
188	(risk adj1 calculat*).mp.	615
189	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	14794
190	(roc adj2 curve?).mp.	5550
191	(validation or discrimination or calibration).mp.	60101
192	algorhythm*.mp.	8
193	algorism*.mp.	15
194	algorithm*.mp.	59746
195	APACHE.mp.	1124
196	Bayesian.mp.	8825
197	bench mark*.mp.	59
198	benchmark*.mp.	10929

199	"c-index??.mp.	701
200	"c-statistic?".mp.	953
201	Charlson.mp.	1518
202	(comorbid* adj2 (index* or indices)).mp.	1492
203	(co-morbid* adj2 (index* or indices)).mp.	70
204	"concordance statistic?".mp.	26
205	(Cox adj2 model*).mp.	3317
206	decision tree?.mp.	1427
207	Elixhauser.mp.	112
208	flow chart?.mp.	164
209	flowchart?.mp.	201
210	"goodness of fit".mp.	1247
211	hazard* model*.mp.	5023
212	hazard* ratio?.mp.	16442
213	"HL test*3".mp.	15
214	"Hosmer-Lemeshow*".mp.	290
215	Kaplan Meier*.mp.	9675
216	log-rank test???.mp.	2953
217	median survival time?.mp.	1098
218	MODS.mp.	249
219	mortality index???.mp.	43
220	mortality indices.mp.	7
221	MPM.mp.	492

222	predict*.mp.	242748
223	prognostic model*.mp.	707
224	propensity scor*3.mp.	4784
225	random-effect* model*.mp.	4365
226	risk ratio?.mp.	2998
227	SAPS.mp.	445
228	SOFA.mp.	864
229	or/100-228 [Prediction Models & related terms]	429221
230	99 and 229 [Emergence Delirium + Children + Prediction]	20

Embase

Embase Classic+Embase 1947 to 2019 May 16

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	229
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	10253
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	18780
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	2058
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	4557

6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	31871
7	anxiety/ and exp surgery/	21749
8	(emergence adj10 agitat*).mp.	688
9	(post?an?esthetic adj3 agitat*).mp.	13
10	(recovery adj10 agitat*).mp.	458
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	12784
12	(agitat* adj8 emergence).mp.	677
13	(emergence adj8 excitement?).mp.	33
14	(postan?esthe* adj8 excitement?).mp.	16
15	(post-an?esthe* adj8 excitement?).mp.	2
16	(postop* adj3 agitat*).mp.	272
17	(post-op* adj3 agitat*).mp.	35
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	18
21	(post-anesth* adj3 agitat*).mp.	7
22	(postanaesth* adj3 agitat*).mp.	6
23	(post-anaesth* adj3 agitat*).mp.	5
24	emergence agitation/ [New Emtree as of 2017]	289
25	delirium/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	10064
26	cognition/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	18718

27	"confusion (uncertainty)"/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	135
28	mental stress/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	5356
29	or/1-28 [Emergence Delirium or Emergence Agitation & related terms]	69313
30	exp Infant/	1105534
31	exp Child/	2856864
32	exp Adolescent/	1568900
33	Child, Preschool/	403434
34	Adolescent Health Services/	37106
35	Adolescent Health/	7720
36	Adolescent Medicine/	50625
37	Adolescent, Hospitalized/	496
38	Adolescent, Institutionalized/	16
39	Child, Hospitalized/	3495
40	Child, Institutionalized/	108
41	exp Child Care/	52302
42	exp Child Health Services/	92958
43	exp Child Welfare/	17616
44	exp Infant Welfare/	1938
45	exp Maternal Health Services/	1156
46	exp Maternal Welfare/	13912
47	exp Maternal-Child Health Centers/	807
48	exp Maternal-Child Nursing/	807

49	exp Pediatrics/	111529
50	Neonatology/	4244
51	Perinatology/	2296
52	Schools, Nursery/	1625
53	"early intervention (education)"/	2627
54	(boy or boys).tw.	199903
55	(girl or girls).tw.	204787
56	(gradeschool* or grade school*).mp.	930
57	(highschool* or high school*).mp.	46748
58	(kid or kids).tw.	10148
59	(minor or minors).tw.	287339
60	(youth?? or youths?).mp.	84318
61	adolescen*.tw,hw,kw.	1664021
62	babies.jw.	0
63	babies.mp.	55799
64	baby*.jw.	1
65	baby*.mp.	76129
66	child*.tw,kw,hw.	2817243
67	elementary school*.mp.	11770
68	infanc*.jw.	1356
69	infanc*.mp.	81398
70	infant*.jw.	10854
71	infant*.mp.	959146

72	junior high*.mp.	3196
73	juvenile?.tw.	99427
74	kindergarten*.mp.	7885
75	middle school*.mp.	6553
76	neonat*.jw.	37101
77	neonat*.mp.	357757
78	neo-nat*.mp.	1363
79	newborn*.jw.	62
80	newborn*.mp.	717579
81	new-born*.mp.	8016
82	nursery school*.mp.	2403
83	paediatr*.jw.	90987
84	paediatr*.mp.	108223
85	pediatr*.jw.	617326
86	pediatr*.mp.	519514
87	perinatal*.mp.	138343
88	peri-natal*.mp.	411
89	preadoles*.mp.	3729
90	pre-adoles*.mp.	1562
91	premie.mp.	45
92	premies.mp.	45
93	premmie?.mp.	3
94	preschool*.mp.	604001

95	pre-school*.mp.	7188
96	schoolage*.mp.	415
97	schoolchild*.mp.	17506
98	senior high*.mp.	1371
99	stepchild*.mp.	320
100	teen*.tw.	39385
101	toddler?.mp.	13100
102	weanling?.mp.	9215
103	exp juvenile/	3706931
104	exp adolescence/	83296
105	exp childhood/	104550
106	exp newborn period/	12501
107	youth??.mp.	84318
108	exp perinatal period/	32847
109	adolescent health/	7720
110	child care/ or child death/ or exp child health/ or exp child health care/ or exp child health insurance/ or exp child hospitalization/ or exp child safety/ or exp child urology/ or childhood mortality/	167809
111	pediatric advanced life support/ or exp pediatric anesthesia/ or exp pediatric cardiology/ or exp pediatric emergency medicine/ or exp pediatric hospital/ or exp pediatric intensive care nursing/ or exp pediatric intensive care unit/ or exp pediatric nurse/ or exp pediatric nurse practitioner/ or exp pediatric nursing/ or exp pediatric surgeon/ or exp pediatric surgery/ or exp pediatric ward/ or exp pediatrician/ or exp pediatrics/	199673
112	or/30-111 [Children & related terms]	5128122
113	29 and 112 [Emergence Delirium + Children]	13286
114	"decision tree"/	11002

115	"failure to rescue (health care)"/	111
116	algorithm/	243018
117	clinical pathway/	8042
118	disease activity score/	4727
119	evaluation study/	38864
120	exp area under the curve/	129047
121	exp decision support system/	22536
122	exp disease severity assessment/	24748
123	exp multivariate analysis/	394502
124	exp multivariate analysis/	394502
125	exp prediction/ and forecasting/	1073
126	exp program evaluation/	20499
127	exp risk/	2313535
128	exp statistical analysis/	2159143
129	exp statistical concepts/	3427977
130	exp statistical model/	154617
131	exp statistical parameters/	1431106
132	exp survival/	1045554
133	health status indicator/	2669
134	life table/	4734
135	markov chain/	3896
136	nomogram/	9110
137	position weight matrix/	623

138	prognosis/ or prognostic assessment/	595295
139	protection/	66264
140	quality adjusted life year/	23570
141	reproducibility/	205185
142	signal noise ratio/	42008
143	treatment outcome/	809840
144	validation study/	76652
145	algorhythm*.mp.	290
146	algorism*.mp.	214
147	algorithm*.mp.	380325
148	APACHE.mp.	20979
149	Bayesian.mp.	48148
150	benchmark*.mp.	42812
151	benchmark*.mp.	42812
152	calibrat*.mp.	142637
153	Charlson.mp.	22537
154	decision tree?.mp.	15356
155	discrimination.mp.	181296
156	Elixhauser.mp.	1278
157	flow chart?.mp.	2334
158	flowchart?.mp.	1755
159	forecast*.mp.	77610
160	hazard* model*.mp.	118483

161	hazard* ratio?.mp.	150827
162	Kaplan Meier*.mp.	125741
163	likelihood*.mp.	176152
164	log-rank test???.mp.	43642
165	median survival time?.mp.	25312
166	MODS.mp.	2911
167	mortality index???.mp.	558
168	mortality indices.mp.	174
169	MPM.mp.	4913
170	predict*.mp.	2016097
171	prognostic model*.mp.	6479
172	propensitys cor*3.mp.	1
173	QALY.mp.	14683
174	Quality-Adjusted Life Year?.mp.	26386
175	random-effect* model*.mp.	29966
176	receiver operating characteristic?.mp.	130718
177	risk???.mp.	3614808
178	SAPS.mp.	5567
179	validation.mp.	369204
180	"near miss??.mp.	3273
181	"acute physiology and chronic health evaluat*".mp.	5727
182	(bivariat* adj3 Gompertz*).mp.	1
183	(clinical adj2 (path or paths or pathway?)).mp.	13130

184	(comorbid* adj2 (index* or indices)).mp.	22928
185	(co-morbid* adj2 (index* or indices)).mp.	1394
186	(Cox adj2 model*).mp.	39059
187	(critical adj2 (path or paths or pathway?)).mp.	7646
188	(decision adj2 tree?).mp.	15523
189	(decision? adj2 aid?).mp.	7080
190	(decision? adj2 analy*).mp.	15181
191	(decision? adj2 model*).mp.	12980
192	(decision? adj2 techni*).mp.	1604
193	(discriminan* adj2 analy*).mp.	30825
194	(evaluat* adj4 (study or studies)).mp.	787636
195	(logistic* adj2 model*).mp.	92618
196	(logistic* adj2 regression*).mp.	378496
197	(multivariab* adj3 Gompertz*).mp.	2
198	(prediction adj2 (model* or tool* or rule?)).mp.	34208
199	(predictive adj1 (model* or tool* or rule?)).mp.	27823
200	(prognostic* adj2 strateg*).mp.	344
201	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	33634
202	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	32523
203	(regression adj analy*).mp.	553975
204	(reproduc* adj2 result*).mp.	16225
205	(risk adj1 calculat*).mp.	5860
206	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	578521

207	(roc adj2 curve?).mp.	60049
208	(survival adj2 (analy* or rate or rates)).mp.	394296
209	(validat* adj4 (study or studies)).mp.	131083
210	"Healthcare Failure Mode and Effect Analysis"/	93
211	"Outcome Assessment (Health Care)"/	313115
212	"Predictive Value of Tests"/	76279
213	"Severity of Illness Index"/	14021
214	"Sensitivity and Specificity"/	324709
215	Actuarial Analysis/	254242
216	Adverse Outcome Pathways/	221
217	Algorithms/	166389
218	Apache/	16033
219	Area Under Curve/	118014
220	Bayes Theorem/	31570
221	Behavioral Risk Factor Surveillance System/	2845
222	Biostatistics/	4567
223	Calibration/	64546
224	Cluster Analysis/	52844
225	Critical Pathways/	8042
226	Data Interpretation, Statistical/	228758
227	Decision Support Techniques/	17149
228	Decision Theory/	1731
229	Discriminant Analysis/	17694

230	Disease-Free Survival/	74162
231	Evaluation Studies as Topic/	23003
232	Evaluation Studies/	38864
233	exp Benchmarking/	3364
234	exp Decision Trees/	11002
235	exp Health Status Indicators/	24514
236	Factor Analysis, Statistical/	5090
237	Failure to Rescue, Health Care/	111
238	Forecasting/	44635
239	Kaplan-Meier Estimate/	53369
240	Karnofsky Performance Status/	9614
241	Life Tables/	4734
242	Likelihood Functions/	154580
243	Linear Models/	124533
244	Logistic Models/	134984
245	Markov Chains/	3830
246	Matched-Pair Analysis/	133427
247	Medical Futility/	770653
248	Models, Statistical/	134976
249	Monte Carlo Method/	36044
250	Nomograms/	9110
251	Odds Ratio/	14944
252	Organ Dysfunction Scores/	662

253	Patient Acuity/	755
254	Position-Specific Scoring Matrices/	623
255	Pregnancy Outcome/	53652
256	Principal Component Analysis/	40137
257	Probability/	94110
258	Program Evaluation/	12622
259	Progression-Free Survival/	92330
260	Propensity Score/	22146
261	Proportional Hazards Models/	67956
262	Protective Factors/	55952
263	Quality-Adjusted Life Years/	23570
264	Regression Analysis/	127859
265	Reproducibility of Results/	156061
266	Roc Curve/	40138
267	Sickness Impact Profile/	2265
268	Signal-To-Noise Ratio/	35474
269	Simplified Acute Physiology Score/	2425
270	Survival Analysis/	14811
271	Survival Rate/	233761
272	Survival/	318877
273	Uncertainty/	22438
274	Validation Studies As Topic/	76652
275	Validation Studies/	76652

276	or/114-275 [Prediction Tools & related terms]	9973408
277	113 and 276 [Emergence Delirium + Children + Prediction]	6824
278	(exp animals/ or exp animal experimentation/ or nonhuman/) not ((exp animals/ or exp animal experimentation/ or nonhuman/) and exp human/)	6981392
279	277 not 278	6555
280	limit 277 to human	6264
281	limit 280 to (adult <18 to 64 years> or aged <65+ years>)	2204
282	280 not 281	4060
283	limit 280 to (embryo <first trimester> or infant <to one year> or child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>)	3813
284	282 or 283	5501
285	remove duplicates from 284	5447

CCTR

Cochrane Central Register of Controlled Trials 2014 to Present

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	50
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	269
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	542

4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	217
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	478
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	1597
7	anxiety/ and exp surgery/	5
8	(emergence adj10 agitat*).mp.	573
9	(post?an?esthetic adj3 agitat*).mp.	10
10	(recovery adj10 agitat*).mp.	316
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	1585
12	(agitat* adj8 emergence).mp.	567
13	(emergence adj8 excitement?).mp.	8
14	(postan?esthe* adj8 excitement?).mp.	3
15	(post-an?esthe* adj8 excitement?).mp.	2
16	(postop* adj3 agitat*).mp.	249
17	(post-op* adj3 agitat*).mp.	32
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	15
21	(post-anesth* adj3 agitat*).mp.	9
22	(postanaesth* adj3 agitat*).mp.	8
23	(post-anaesth* adj3 agitat*).mp.	4

24	emergence agitation/ [New Emtree as of 2017]	0
25	delirium/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	183
26	cognition/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	365
27	"confusion (uncertainty)"/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	0
28	mental stress/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	0
29	or/1-28 [Emergence Delirium or Emergence Agitation & related terms]	4712
30	exp Infant/	29615
31	exp Child/	52233
32	exp Adolescent/	99154
33	Child, Preschool/	27800
34	Adolescent Health Services/	166
35	Adolescent Health/	19
36	Adolescent Medicine/	4
37	Adolescent, Hospitalized/	6
38	Adolescent, Institutionalized/	1
39	Child, Hospitalized/	111
40	Child, Institutionalized/	62
41	exp Child Care/	1028
42	exp Child Health Services/	789
43	exp Child Welfare/	971
44	exp Infant Welfare/	77

45	exp Maternal Health Services/	1892
46	exp Maternal Welfare/	106
47	exp Maternal-Child Health Centers/	43
48	exp Maternal-Child Nursing/	178
49	exp Pediatrics/	624
50	Neonatology/	28
51	Perinatology/	12
52	Schools, Nursery/	36
53	"early intervention (education)"/	442
54	(boy or boys).tw.	6155
55	(girl or girls).tw.	6559
56	(gradeschool* or grade school*).mp.	110
57	(highschool* or high school*).mp.	3190
58	(kid or kids).tw.	827
59	(minor or minors).tw.	15112
60	(youth?? or youths?).mp.	6015
61	adolescen*.tw,hw,kw.	129131
62	babies.jw.	0
63	babies.mp.	3782
64	baby*.jw.	1
65	baby*.mp.	3881
66	child*.tw,kw,hw.	140574
67	elementary school*.mp.	1346

68	infanc*.jw.	30
69	infanc*.mp.	2257
70	infant*.jw.	221
71	infant*.mp.	55953
72	junior high*.mp.	273
73	juvenile?.tw.	1873
74	kindergarten*.mp.	587
75	middle school*.mp.	854
76	neonat*.jw.	1417
77	neonat*.mp.	19734
78	neo-nat*.mp.	6
79	newborn*.jw.	3
80	newborn*.mp.	25157
81	new-born*.mp.	216
82	nursery school*.mp.	78
83	paediatr*.jw.	3613
84	paediatr*.mp.	6530
85	pediatr*.jw.	23996
86	pediatr*.mp.	26389
87	perinatal*.mp.	5096
88	peri-natal*.mp.	8
89	preadoles*.mp.	299
90	pre-adoles*.mp.	110

91	premie.mp.	1
92	premies.mp.	9
93	premmie?.mp.	1
94	preschool*.mp.	36194
95	pre-school*.mp.	590
96	schoolage*.mp.	18
97	schoolchild*.mp.	1289
98	senior high*.mp.	70
99	stepchild*.mp.	4
100	teen*.tw.	2239
101	toddler?.mp.	1435
102	weanling?.mp.	17
103	exp juvenile/	0
104	exp adolescence/	99154
105	exp childhood/	0
106	exp newborn period/	0
107	youth??.mp.	6015
108	exp perinatal period/	0
109	adolescent health/	19
110	child care/ or child death/ or exp child health/ or exp child health care/ or exp child health insurance/ or exp child hospitalization/ or exp child safety/ or exp child urology/ or childhood mortality/	1020
111	pediatric advanced life support/ or exp pediatric anesthesia/ or exp pediatric cardiology/ or exp pediatric emergency medicine/ or exp pediatric hospital/ or exp pediatric intensive care nursing/ or exp pediatric intensive care unit/ or exp pediatric nurse/ or exp pediatric nurse practitioner/ or exp	1872

	pediatric nursing/ or exp pediatric surgeon/ or exp pediatric surgery/ or exp pediatric ward/ or exp pediatrician/ or exp pediatrics/	
112	or/30-111 [Children & related terms]	286839
113	29 and 112 [Emergence Delirium + Children]	1590
114	"decision tree"/	157
115	"failure to rescue (health care)"/	0
116	algorithm/	3354
117	clinical pathway/	177
118	disease activity score/	0
119	evaluation study/	0
120	exp area under the curve/	0
121	exp decision support system/	0
122	exp disease severity assessment/	0
123	exp multivariate analysis/	5411
124	exp multivariate analysis/	5411
125	exp prediction/ and forecasting/	0
126	exp program evaluation/	5654
127	exp risk/	35908
128	exp statistical analysis/	0
129	exp statistical concepts/	0
130	exp statistical model/	15045
131	exp statistical parameters/	0
132	exp survival/	130
133	health status indicator/	972

134	life table/	544
135	markov chain/	256
136	nomogram/	65
137	position weight matrix/	1
138	prognosis/ or prognostic assessment/	13055
139	protection/	0
140	quality adjusted life year/	1106
141	reproducibility/	0
142	signal noise ratio/	0
143	treatment outcome/	122989
144	validation study/	0
145	algorhythm*.mp.	6
146	algorism*.mp.	15
147	algorithm*.mp.	12241
148	APACHE.mp.	2237
149	Bayesian.mp.	1868
150	benchmark*.mp.	1153
151	benchmark*.mp.	1153
152	calibrat*.mp.	3762
153	Charlson.mp.	838
154	decision tree?.mp.	592
155	discrimination.mp.	5037
156	Elixhauser.mp.	25

157	flow chart?.mp.	145
158	flowchart?.mp.	106
159	forecast*.mp.	1006
160	hazard* model*.mp.	11510
161	hazard* ratio?.mp.	20715
162	Kaplan Meier*.mp.	12326
163	likelihood*.mp.	9477
164	log-rank test???.mp.	4667
165	median survival time?.mp.	2244
166	MODS.mp.	253
167	mortality index???.mp.	30
168	mortality indices.mp.	6
169	MPM.mp.	248
170	predict*.mp.	92698
171	prognostic model*.mp.	384
172	propensitys cor*3.mp.	0
173	QALY.mp.	2527
174	Quality-Adjusted Life Year?.mp.	4247
175	random-effect* model*.mp.	2235
176	receiver operating characteristic?.mp.	4729
177	risk???.mp.	216058
178	SAPS.mp.	455
179	validation.mp.	12212

180	"near miss??" .mp.	66
181	"acute physiology and chronic health evaluat*" .mp.	794
182	(bivariat* adj3 Gompertz*) .mp.	0
183	(clinical adj2 (path or paths or pathway?)) .mp.	744
184	(comorbid* adj2 (index* or indices)) .mp.	946
185	(co-morbid* adj2 (index* or indices)) .mp.	70
186	(Cox adj2 model*) .mp.	3273
187	(critical adj2 (path or paths or pathway?)) .mp.	303
188	(decision adj2 tree?) .mp.	601
189	(decision? adj2 aid?) .mp.	1402
190	(decision? adj2 analy*) .mp.	1378
191	(decision? adj2 model*) .mp.	977
192	(decision? adj2 techni*) .mp.	797
193	(discriminan* adj2 analy*) .mp.	747
194	(evaluat* adj4 (study or studies)) .mp.	133458
195	(logistic* adj2 model*) .mp.	9872
196	(logistic* adj2 regression*) .mp.	18835
197	(multivariab* adj3 Gompertz*) .mp.	0
198	(prediction adj2 (model* or tool* or rule?)) .mp.	1871
199	(predictive adj1 (model* or tool* or rule?)) .mp.	1101
200	(prognostic* adj2 strateg*) .mp.	32
201	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)) .mp.	2414
202	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)) .mp.	2205

203	(regression adj analy*).mp.	29529
204	(reproduc* adj2 result*).mp.	11890
205	(risk adj1 calculat*).mp.	541
206	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	27417
207	(roc adj2 curve?).mp.	2866
208	(survival adj2 (analy* or rate or rates)).mp.	37889
209	(validat* adj4 (study or studies)).mp.	6740
210	"Healthcare Failure Mode and Effect Analysis"/	0
211	"Outcome Assessment (Health Care)"/	6625
212	"Predictive Value of Tests"/	6985
213	"Severity of Illness Index"/	18300
214	"Sensitivity and Specificity"/	9150
215	Actuarial Analysis/	345
216	Adverse Outcome Pathways/	0
217	Algorithms/	3354
218	Apache/	531
219	Area Under Curve/	6576
220	Bayes Theorem/	363
221	Behavioral Risk Factor Surveillance System/	6
222	Biostatistics/	4
223	Calibration/	340
224	Cluster Analysis/	2257
225	Critical Pathways/	177

226	Data Interpretation, Statistical/	1652
227	Decision Support Techniques/	730
228	Decision Theory/	6
229	Discriminant Analysis/	190
230	Disease-Free Survival/	6480
231	Evaluation Studies as Topic/	3697
232	Evaluation Studies/	1
233	exp Benchmarking/	96
234	exp Decision Trees/	157
235	exp Health Status Indicators/	20399
236	Factor Analysis, Statistical/	622
237	Failure to Rescue, Health Care/	0
238	Forecasting/	513
239	Kaplan-Meier Estimate/	4681
240	Karnofsky Performance Status/	206
241	Life Tables/	544
242	Likelihood Functions/	324
243	Linear Models/	4172
244	Logistic Models/	5003
245	Markov Chains/	256
246	Matched-Pair Analysis/	568
247	Medical Futility/	30
248	Models, Statistical/	1133

249	Monte Carlo Method/	181
250	Nomograms/	65
251	Odds Ratio/	2900
252	Organ Dysfunction Scores/	53
253	Patient Acuity/	59
254	Position-Specific Scoring Matrices/	1
255	Pregnancy Outcome/	2757
256	Principal Component Analysis/	214
257	Probability/	3092
258	Program Evaluation/	5570
259	Progression-Free Survival/	65
260	Propensity Score/	177
261	Proportional Hazards Models/	4807
262	Protective Factors/	83
263	Quality-Adjusted Life Years/	1106
264	Regression Analysis/	5447
265	Reproducibility of Results/	11366
266	Roc Curve/	1200
267	Sickness Impact Profile/	526
268	Signal-To-Noise Ratio/	101
269	Simplified Acute Physiology Score/	2
270	Survival Analysis/	7905
271	Survival Rate/	9640

272	Survival/	130
273	Uncertainty/	135
274	Validation Studies As Topic/	27
275	Validation Studies/	0
276	or/114-275 [Prediction Tools & related terms]	566941
277	113 and 276 [Emergence Delirium + Children + Prediction]	516
278	limit 277 to medline records	427
279	limit 277 to embase records	66
280	278 or 279	493
281	277 not 280	23
282	remove duplicates from 281	23

CDSR

Cochrane Database of Systematic Reviews 2005 to Present

#	Searches	Results
1	(emergence adj8 delirium).mp.	7
2	(emergence adj10 agitat*).mp.	4
3	(post?an?esthetic adj3 agitat*).mp.	2
4	(recovery adj10 agitat*).mp.	7
5	(agitat* adj8 emergence).mp.	4
6	(emergence adj8 excitement?).mp.	2
7	(postan?esthe* adj8 excitement?).mp.	0

8	(post-an?esthe* adj8 excitement?).mp.	0
9	(postop* adj3 agitat*).mp.	4
10	(post-op* adj3 agitat*).mp.	0
11	(postsurg* adj3 agitat*).mp.	0
12	(post-surg* adj3 agitat*).mp.	0
13	(postanesth* adj3 agitat*).mp.	1
14	(post-anesth* adj3 agitat*).mp.	0
15	(postanaesth* adj3 agitat*).mp.	3
16	(post-anaesth* adj3 agitat*).mp.	0
17	or/1-16 [Emergence Delirium & related terms]	15
18	(boy or boys).tw.	427
19	(girl or girls).tw.	432
20	(gradeschool* or grade school*).mp.	5
21	(highschool* or high school*).mp.	166
22	(kid or kids).tw.	107
23	(minor or minors).tw.	2134
24	(youth?? or youths?).mp.	294
25	babies.jw.	0
26	babies.mp.	1086
27	baby*.jw.	0
28	baby*.mp.	1084
29	elementary school*.mp.	70
30	infanc*.jw.	0

31	infanc*.mp.	336
32	infant*.jw.	0
33	infant*.mp.	2068
34	junior high*.mp.	13
35	juvenile?.tw.	209
36	kindergarten*.mp.	82
37	middle school*.mp.	32
38	neonat*.jw.	0
39	neonat*.mp.	1567
40	neo-nat*.mp.	38
41	newborn*.jw.	0
42	newborn*.mp.	1225
43	new-born*.mp.	90
44	nursery school*.mp.	53
45	paediatr*.jw.	0
46	paediatr*.mp.	1599
47	pediatr*.jw.	0
48	pediatr*.mp.	1091
49	perinatal*.mp.	903
50	peri-natal*.mp.	10
51	preadoles*.mp.	22
52	pre-adoles*.mp.	18
53	premie.mp.	14

54	premies.mp.	19
55	premmie?.mp.	0
56	preschool*.mp.	585
57	pre-school*.mp.	200
58	schoolage*.mp.	37
59	schoolchild*.mp.	122
60	senior high*.mp.	3
61	stepchild*.mp.	1
62	teen*.tw.	412
63	toddler?.mp.	254
64	weanling?.mp.	1
65	youth??.mp.	294
66	or/18-65 [Children]	5260
67	17 and 66 [Emergence Delirium + Children]	13
68	algorhythm*.mp.	0
69	algorism*.mp.	0
70	algorithm*.mp.	604
71	APACHE.mp.	61
72	Bayesian.mp.	133
73	benchmark*.mp.	115
74	benchmark*.mp.	115
75	calibrat*.mp.	120
76	Charlson.mp.	18

77	decision tree?.mp.	36
78	discrimination.mp.	189
79	Elixhauser.mp.	3
80	flow chart?.mp.	892
81	flowchart?.mp.	301
82	forecast*.mp.	28
83	hazard* model*.mp.	57
84	hazard* ratio?.mp.	1362
85	Kaplan Meier*.mp.	334
86	likelihood*.mp.	2379
87	log-rank test???.mp.	113
88	median survival time?.mp.	85
89	MODS.mp.	10
90	mortality index???.mp.	1
91	mortality indices.mp.	0
92	MPM.mp.	8
93	predict*.mp.	3262
94	prognostic model*.mp.	11
95	propensitys cor*3.mp.	0
96	QALY.mp.	110
97	Quality-Adjusted Life Year?.mp.	181
98	random-effect* model*.mp.	6247
99	receiver operating characteristic?.mp.	179

100	risk???.mp.	9478
101	SAPS.mp.	76
102	validation.mp.	526
103	"near miss??.mp.	17
104	"acute physiology and chronic health evaluat*?.mp.	39
105	(bivariat* adj3 Gompertz*).mp.	0
106	(clinical adj2 (path or paths or pathway?)).mp.	224
107	(comorbid* adj2 (index* or indices)).mp.	13
108	(co-morbid* adj2 (index* or indices)).mp.	1
109	(Cox adj2 model*).mp.	74
110	(critical adj2 (path or paths or pathway?)).mp.	23
111	(decision adj2 tree?).mp.	37
112	(decision? adj2 aid?).mp.	139
113	(decision? adj2 analy*).mp.	148
114	(decision? adj2 model*).mp.	50
115	(decision? adj2 techni*).mp.	37
116	(discriminan* adj2 analy*).mp.	5
117	(evaluat* adj4 (study or studies)).mp.	4048
118	(logistic* adj2 model*).mp.	84
119	(logistic* adj2 regression*).mp.	197
120	(multivariab* adj3 Gompertz*).mp.	0
121	(prediction adj2 (model* or tool* or rule?)).mp.	63
122	(predictive adj1 (model* or tool* or rule?)).mp.	22

123	(prognostic* adj2 strateg*).mp.	0
124	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	56
125	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	43
126	(regression adj analy*).mp.	567
127	(reproduc* adj2 result*).mp.	60
128	(risk adj1 calculat*).mp.	795
129	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	3906
130	(roc adj2 curve?).mp.	102
131	(survival adj2 (analy* or rate or rates)).mp.	903
132	(validat* adj4 (study or studies)).mp.	551
133	or/68-132 [Prediction Tools & related terms]	9507
134	67 and 133 [Emergence Delirium + Children + Prediction]	13
135	(child* or adolescen* or teen or teens or teenage? or infant? or baby or babies or newborn? or neonat* or p?ediatr*).ti,gw.	2991
136	134 and 135	8
137	limit 136 to full systematic reviews	8

PsycINFO

PsycINFO 1806 to May Week 2 2019

1	(emergence adj2 delirium).mp.	19
2	agitation/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	9
3	anxiety/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	1278

4	cognition/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	288
5	delirium/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	323
6	psychological stress/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	161
7	(emergence adj10 agitat*).mp.	28
8	(post?an?esthetic adj3 agitat*).mp.	0
9	(recovery adj10 agitat*).mp.	32
10	(deliri* and (anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?)).mp.	874
11	(agitat* adj8 emergence).mp.	26
12	(emergence adj8 excitement?).mp.	7
13	(postan?esthe* adj8 excitement?).mp.	0
14	(post-an?esthe* adj8 excitement?).mp.	0
15	(postop* adj3 agitat*).mp.	5
16	(post-op* adj3 agitat*).mp.	1
17	(postsurg* adj3 agitat*).mp.	0
18	(post-surg* adj3 agitat*).mp.	0
19	(postanesth* adj3 agitat*).mp.	0
20	(post-anesth* adj3 agitat*).mp.	0
21	(postanaesth* adj3 agitat*).mp.	0
22	(post-anaesth* adj3 agitat*).mp.	0
23	or/1-22 [Emergence Delirium & related terms]	2655
24	Adolescent Health/	1242
25	Adolescent Medicine/	0
26	exp Child Care/	9467

27	exp Child Welfare/	8581
28	exp Pediatrics/	27229
29	"early intervention (education)"/	0
30	(boy or boys).tw.	70760
31	(girl or girls).tw.	69781
32	(gradeschool* or grade school*).mp.	1362
33	(highschool* or high school*).mp.	93026
34	(kid or kids).tw.	4237
35	(minor or minors).tw.	24271
36	(youth?? or youths?).mp.	98276
37	babies.jw.	1
38	babies.mp.	6142
39	baby*.jw.	0
40	baby*.mp.	12771
41	elementary school*.mp.	66653
42	infanc*.jw.	1740
43	infanc*.mp.	19067
44	infant*.jw.	7350
45	infant*.mp.	91129
46	junior high*.mp.	16881
47	juvenile?.tw.	26540
48	kindergarten*.mp.	19118
49	middle school*.mp.	19911

50	neonat*.jw.	1035
51	neonat*.mp.	20799
52	neo-nat*.mp.	63
53	newborn*.jw.	665
54	newborn*.mp.	11030
55	new-born*.mp.	393
56	nursery school*.mp.	2974
57	paediatr*.jw.	2551
58	paediatr*.mp.	4870
59	pediatr*.jw.	15119
60	pediatr*.mp.	42956
61	perinatal*.mp.	10785
62	peri-natal*.mp.	68
63	preadoles*.mp.	3889
64	pre-adoles*.mp.	1248
65	premie.mp.	4
66	premies.mp.	4
67	premmie?.mp.	0
68	preschool*.mp.	48874
69	pre-school*.mp.	3587
70	schoolage*.mp.	801
71	schoolchild*.mp.	3693
72	senior high*.mp.	2498

73	stepchild*.mp.	767
74	teen*.tw.	21904
75	toddler?.mp.	9983
76	weanling?.mp.	624
77	or/24-76 [Children]	620500
78	23 and 77 [Emergence Delirium + Children]	237
79	Algorithms/	17649
80	Bayes Theorem/	5586
81	Cluster Analysis/	3909
82	Decision Theory/	779
83	Factor Analysis, Statistical/	0
84	Failure to Rescue, Health Care/	0
85	Logistic Models/	6102
86	Markov Chains/	1444
87	Pregnancy Outcome/	1008
88	Principal Component Analysis/	647
89	Probability/	5943
90	Program Evaluation/	12230
91	Protective Factors/	4875
92	Regression Analysis/	2894
93	Risk Assessment/	12885
94	Risk Factors/	74196
95	Survival/	767

96	Uncertainty/	7618
97	"near miss??" .mp.	484
98	"acute physiology and chronic health evaluat*" .mp.	165
99	(adverse outcome? adj (index?? or indices)).mp.	2
100	(bivariat* adj3 Gompertz*).mp.	2
101	(critical adj2 (path or paths or pathway or pathways)).mp.	453
102	(decision adj2 tree?).mp.	1626
103	(decision? adj2 aid?).mp.	1664
104	(decision? adj2 analy*).mp.	2950
105	(decision? adj2 model*).mp.	5129
106	(decision? adj2 techni*).mp.	401
107	(logistic* adj2 model*).mp.	13022
108	(logistic* adj2 regression*).mp.	51535
109	(multivariab* adj3 Gompertz*).mp.	0
110	(prediction adj1 (model or tool or rule)).mp.	1596
111	(predictive adj1 (value of tests or model)).mp.	1666
112	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	811
113	(prognostic* adj2 strateg*).mp.	14
114	receiver operating characteristic?.mp.	4637
115	(regression adj analy*).mp.	75051
116	(risk adj1 calculat*).mp.	286
117	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	22285
118	(roc adj2 curve?).mp.	2189

119	(validation or discrimination or calibration).mp.	146816
120	algorhythm*.mp.	5
121	algorism*.mp.	7
122	algorithm*.mp.	33085
123	APACHE.mp.	288
124	Bayesian.mp.	9747
125	bench mark*.mp.	65
126	benchmark*.mp.	8009
127	"c-index??" .mp.	112
128	"c-statistic?" .mp.	279
129	Charlson.mp.	1582
130	(comorbid* adj2 (index* or indices)).mp.	1640
131	(co-morbid* adj2 (index* or indices)).mp.	80
132	"concordance statistic?" .mp.	13
133	(Cox adj2 model*).mp.	1298
134	decision tree?.mp.	1598
135	Elixhauser.mp.	51
136	flow chart?.mp.	355
137	flowchart?.mp.	312
138	"goodness of fit".mp.	4296
139	hazard* model*.mp.	3122
140	hazard* ratio?.mp.	5885
141	"HL test*3".mp.	10

142	"Hosmer-Lemeshow*".mp.	63
143	Kaplan Meier*.mp.	1543
144	log-rank test???.mp.	385
145	median survival time?.mp.	151
146	MODS.mp.	49
147	mortality index??.mp.	14
148	mortality indices.mp.	6
149	MPM.mp.	63
150	predict*.mp.	429515
151	prognostic model*.mp.	203
152	propensity scor*3.mp.	2806
153	random-effect* model*.mp.	2754
154	risk ratio?.mp.	1872
155	SAPS.mp.	536
156	SOFA.mp.	95
157	or/79-156 [Prediction tools & related terms]	776076
158	78 and 157 [Emergence Delirium + Children + Prediction]	47
159	limit 158 to human	46
160	limit 159 to (100 childhood <birth to age 12 yrs> or 120 neonatal <birth to age 1 mo> or 140 infancy <2 to 23 mo> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>)	26
161	remove duplicates from 160	26

Web of Science

EmergDeliriumPredict

Web of Science Core Collection: Citation Indexes

- Science Citation Index Expanded (SCI-EXPANDED) --1900-present
- Social Sciences Citation Index (SSCI) --1900-present
- Arts & Humanities Citation Index (A&HCI) --1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
- Book Citation Index– Science (BKCI-S) --2005-present
- Book Citation Index– Social Sciences & Humanities (BKCI-SSH) --2005-present
- Emerging Sources Citation Index (ESCI) --2005-present

Data last updated: 2019-05-16

# 8	160	#6 NOT #7 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 7	21,613,191	PMID=((0* or 1* OR 2* OR 3* or 4* or 5* or 6* or 7* or 8* or 9*)) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 6	1,460	#5 AND #4 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 5	3,940,385	TS=(surgical* OR surgery* OR surgeon* OR neurosurgeon* OR surgeries* OR surgical* OR surgeon* OR operati* OR reoperat* OR resect* OR reresect* OR surgical* OR postoperative* OR post-operative* OR postop* OR post-op* OR postprocedur* OR post-procedur* OR post-surg* OR postsurg* OR segmentectom* OR lymphectom* OR necrosectom* OR adenectom* OR adrenalectom* OR appendectom* OR arthrectom* OR cervicectom* OR cholecystectom* OR colectom* OR cystectom* OR dissectom* OR diskectom* OR duodenectom* OR esophagectom* OR pneumonectom* OR fundectom* OR gastrectom* OR glossectom* OR gonadectom* OR hemicolectom* OR hemi-colectom* OR hepatectom* OR hypophysectom* OR iridectom* OR jejunectom* OR laryngectom* OR lobectom* OR lumpectom* OR lymphadenectom* OR lymphadenectom* OR mandibulectom* OR mastectom* OR mastoidectom* OR maxillectom* OR metastasectom* OR myectom* OR myomectom* OR nephrectom* OR oophorectom* OR orchidectom* OR orchiectom* OR pancreatetectom* OR pancreaticoduodenectom* OR pancreatico-duodenectom* OR parathyroidectom* OR para-thyroidectom* OR pharyngectom* OR pharyngolaryngoesophagectom* OR pneumonectom* OR postmastect* OR postsurgery* OR proctocollectom* OR prostatect* OR quadrantectom* OR rhinectom* OR salpingectom* OR salpingo-oophorectom* OR splenectom* OR thymectom* OR thyroidectom* OR tonsillectom* OR

		tumorectom* OR uretrectom* OR uvulectom* OR vaginectom* OR vulvectom* OR segmentectom* OR subsegmentectom* OR sub-segmentectom* OR mesohepatectom* OR mesohepatectom* OR laparotom* OR laparoscop* OR arthroplast* OR hemiarthroplast* OR hemiarthroplast* OR neurosurg*) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 4	26,861	#3 AND #2 AND #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 3	10,106,633	TS=(("Healthcare Failure Mode and Effect Analysis") OR ("Outcome and Process Assessment (Health Care)") OR ("Predictive Value of Tests") OR ("Severity of Illness Index") OR ("Sensitivity and Specificity") OR ("Actuarial Analysis") OR ("Adverse Outcome Pathways") OR (Algorithms) OR (Apache) OR ("Area Under Curve") OR ("Bayes Theorem") OR ("Behavioral Risk Factor Surveillance System") OR (Biostatistics) OR (Calibration) OR ("Cluster Analysis") OR ("Critical Pathways") OR ("Data Interpretation, Statistical") OR ("Decision Support Techniques") OR ("Decision Theory") OR ("Discriminant Analysis") OR ("Disease-Free Survival") OR ("Evaluation Studies as Topic") OR ("Evaluation Studies") OR (Benchmarking) OR ("Decision Trees") OR ("Health Status Indicators") OR ("Factor Analysis, Statistical") OR ("Failure to Rescue, Health Care") OR (Forecasting) OR ("Kaplan-Meier Estimate") OR ("Karnofsky Performance Status") OR ("Life Tables") OR ("Likelihood Functions") OR ("Linear Models") OR ("Logistic Models") OR ("Markov Chains") OR ("Matched-Pair Analysis") OR ("Medical Futility") OR ("Models, Statistical") OR ("Monte Carlo Method") OR (Nomograms) OR ("Odds Ratio") OR ("Organ Dysfunction Scores") OR ("Patient Acuity") OR ("Position-Specific Scoring Matrices") OR ("Pregnancy Outcome") OR ("Principal Component Analysis") OR (Probability) OR ("Program Evaluation") OR ("Progression-Free Survival") OR ("Propensity Score") OR ("Proportional Hazards Models") OR ("Protective Factors") OR ("Quality-Adjusted Life Years") OR ("Regression Analysis") OR ("Reproducibility of Results") OR ("Risk Assessment") OR ("Risk Factors") OR (Risk) OR ("Roc Curve") OR ("Sickness Impact Profile") OR ("Signal-To-Noise Ratio") OR ("Simplified Acute Physiology Score") OR ("Survival Analysis") OR ("Survival Rate") OR (Survival) OR (Uncertainty) OR ("Validation Studies As Topic") OR ("Validation Studies") OR ("near miss**") OR ("acute physiology and chronic health evaluat**") OR (("adverse outcome* adj" (index** OR indices))) OR ((bivariat* NEAR/3 Gompertz*)) OR ((critical NEAR/2 (path OR paths OR pathway OR pathways))) OR ((decision NEAR/2 tree*)) OR ((decision* NEAR/2 aid*)) OR ((decision* NEAR/2 analy*)) OR ((decision* NEAR/2 model*)) OR ((decision* NEAR/2 techni*)) OR ((logistic* NEAR/2 model*)) OR ((logistic* NEAR/2 regression*)) OR ((multivariab* NEAR/3 Gompertz*)) OR ((prediction NEAR/1 (model OR tool OR rule))) OR ((predictive NEAR/1 ("value of tests" OR model))) OR ((prognostic* NEAR/2 (scor* OR index** OR indices OR rate* OR rating* OR model* OR tool*))) OR ((prognostic* NEAR/2 strateg*)) OR ("receiver operating characteristic**") OR ("regression adj analy**") OR ((risk NEAR/1 calculat*)) OR ((risk NEAR/1 (adjust* OR assess* OR scor* OR engine* OR equation* OR algorithm* OR table* OR function**))) OR ((roc NEAR/2 curve*)) OR ((validation OR discrimination OR calibration)) OR (algorith*) OR (algorism*) OR (algorithm*) OR (APACHE) OR (Bayesian) OR ("bench mark**") OR (benchmark*) OR (c-index**) OR (c-statistic*) OR (Charlson) OR ((comorbid* NEAR/2 (index* OR indices))) OR ((co-morbid* NEAR/2 (index* OR indices))) OR ("concordance statistic**") OR ((Cox NEAR/2 model*)) OR ("decision tree**") OR (Elixhauser) OR ("flow chart**") OR (flowchart*) OR ("goodness of fit") OR ("hazard* model**") OR ("hazard* ratio**") OR ("HL test*3") OR (Hosmer-Lemeshow*)

		OR ("Kaplan Meier*") OR ("log-rank test***") OR ("median survival time*") OR (MODS) OR ("mortality index**") OR ("mortality indices") OR (MPM) OR (predict*) OR ("prognostic model*") OR ("propensity scor*3") OR ("random-effect* model*") OR ("risk ratio*") OR (SAPS) OR (SOFA)) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 2	3,463,068	TS=((Infant) OR (Child) OR (Adolescent) OR ("Child, Preschool") OR ("Adolescent Health Services") OR ("Adolescent Health") OR ("Adolescent Medicine") OR ("Adolescent, Hospitalized") OR ("Adolescent, Institutionalized") OR ("Child, Hospitalized") OR ("Child, Institutionalized") OR ("Child Care") OR ("Child Health Services") OR ("Child Welfare") OR ("Infant Welfare") OR ("Maternal Health Services") OR ("Maternal Welfare") OR ("Maternal-Child Health Centers") OR ("Maternal-Child Nursing") OR (Pediatrics) OR (Neonatology) OR (Perinatology) OR ("Schools, Nursery") OR ("early intervention (education)") OR ((boy OR boys) OR ((girl OR girls) OR ((gradeschool* OR "grade school*") OR ((highschool* OR "high school*") OR ((kid OR kids) OR ((minor OR minors) OR (youth* OR youths*)) OR (adolescen*) OR (babies) OR (baby*) OR ((child OR childhood* OR children*)) OR ("elementary school*") OR (infanc*) OR (infant*) OR ("junior high*") OR (juvenile*) OR (kindergarten*) OR ("middle school*") OR (neonat*) OR (neo-nat*) OR (newborn*) OR (new-born*) OR ("nursery school*") OR (paediatr*) OR (pediatr*) OR (perinatal*) OR (peri-natal*) OR (preadoles*) OR (pre-adoles*) OR (premie) OR (preemies) OR (premmie*) OR (preschool*) OR (pre-school*) OR (schoolage*) OR (schoolchild*) OR ("senior high*") OR (stepchild*) OR (teen*) OR (toddler*) OR (weanling*)) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
# 1	259,722	TS=(("Emergence Delirium") OR (Delirium AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Cognition AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR ("Psychomotor Agitation" AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR ("Stress, Psychological" AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Anxiety AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Anxiety OR ((emergence NEAR/10 agit*) OR ("post*an*esthetic" NEAR/3 agit*) OR ((recovery NEAR/10 agit*) OR (deliri* AND ((anesth* OR anaesth* OR postop* OR post-op OR "postan*esth*" OR "post-an*esth*" OR surgery OR surgeries OR surgical OR "operation*") OR su OR "surgical procedures, operative")) OR ((agitat* NEAR/8 emergence) OR ((emergence NEAR/8 "excitement*") OR ("postan*esthe*" NEAR/8 "excitement*") OR ("post-an*esthe*" NEAR/8 "excitement*") OR ((postop* NEAR/3 agit*) OR ((post-op* NEAR/3 agit*) OR ((postsurg* NEAR/3 agit*) OR ((post-surg* NEAR/3 agit*) OR ((postanesth* NEAR/3 agit*) OR ((post-anesth* NEAR/3 agit*) OR ((postanaesth* NEAR/3 agit*) OR ((post-anaesth* NEAR/3 agit*))) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years

Scopus

Predict Emergence Delirium in Children

248 document results

(((INDEXTERMS ("Emergence Delirium")) OR (INDEXTERMS ("Delirium") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su"))) OR (INDEXTERMS ("Cognition") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su"))) OR (INDEXTERMS ("Psychomotor Agitation") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su"))) OR (INDEXTERMS ("Stress, Psychological") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su"))) OR (INDEXTERMS ("Anxiety") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su"))) OR (INDEXTERMS ("Anxiety")) OR ((TITLE-ABS-KEY ("emergence") W/10 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post*an*esthetic") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("recovery") W/10 TITLE-ABS-KEY ("agitat*"))) OR (TITLE-ABS-KEY ("deliri*") AND ((TITLE-ABS-KEY ("anesth*") OR TITLE-ABS-KEY ("anaesth*") OR TITLE-ABS-KEY ("postop*") OR TITLE-ABS-KEY ("post-op") OR TITLE-ABS-KEY ("postan*esth*") OR TITLE-ABS-KEY ("post-an*esth*") OR TITLE-ABS-KEY ("surgery") OR TITLE-ABS-KEY ("surgeries") OR TITLE-ABS-KEY ("surgical") OR TITLE-ABS-KEY ("operation*")) OR INDEXTERMS ("su") OR INDEXTERMS ("surgical procedures, operative"))) OR ((TITLE-ABS-KEY ("agitat*") W/8 TITLE-ABS-KEY ("emergence"))) OR ((TITLE-ABS-KEY ("emergence") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("postan*esthe*") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("post-an*esthe*") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("postop*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-op*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postsurg*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-surg*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postanesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-anesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postanaesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-anaesth*") W/3 TITLE-ABS-KEY ("agitat*"))) AND ((INDEXTERMS ("Infant")) OR (INDEXTERMS ("Child")) OR (INDEXTERMS ("Adolescent")) OR (INDEXTERMS ("Child, Preschool")) OR (INDEXTERMS ("Adolescent Health Services")) OR (INDEXTERMS ("Adolescent Health")) OR (INDEXTERMS ("Adolescent Medicine")) OR (INDEXTERMS ("Adolescent, Hospitalized")) OR (INDEXTERMS ("Adolescent,

1
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 3 Institutionalized") OR (INDEXTERMS ("Child, Hospitalized")) OR (INDEXTERMS ("Child,
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 13 ABS ("kids"))) OR ((TITLE-ABS ("minor") OR TITLE-ABS ("minors"))) OR ((TITLE-ABS-
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 50 Outcome")) OR (INDEXTERMS ("Principal Component
 51 Analysis")) OR (INDEXTERMS ("Probability")) OR (INDEXTERMS ("Program
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 53 Score")) OR (INDEXTERMS ("Proportional Hazards Models")) OR (INDEXTERMS ("Protective
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OR *myectom** OR *myomectom** OR *nephrectom** OR *oophorectom** OR *orchidectom** OR *orchiectom** OR *p
ancreatectom** OR *pancreaticoduodenectom** OR *pancreatico-duodenectom** OR *parathyroidectom** OR *para-
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hepatectom** OR *laparotom** OR *laparoscop** OR *arthroplast** OR *hemiarthroplast** OR *hemi-
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NOT (PMID ("0*" OR "1*" OR "2*" OR "3*" OR "4*" OR "5*" OR "6*" OR "7*" OR "8*" OR "9*")) AND
(LIMIT-TO (EXACTKEYWORD , "Human"))

PubMed-NOT-Medline

Search	Query	Items found
#18	Search (((((((("Emergence Delirium"[Mesh:NoExp]) OR (Delirium[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Cognition[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR ("Psychomotor Agitation"[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR ("Stress, Psychological"[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Anxiety[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Anxiety[Mesh:NoExp] OR ((emergence[tw] AND agitat*[tw])) OR ((postanesthetic[tw] AND agitat*[tw])) OR ((postanaesthetic[tw] AND agitat*[tw])) OR ((post-anesthetic[tw] AND agitat*[tw])) OR ((post-anaesthetic[tw] AND agitat*[tw])) OR ((recovery[tw] AND agitat*[tw])) OR (deliri*[tw] AND ((anesth* OR anaesth* OR postop* OR post-op OR postanesth* OR post-anaesth* OR postanaesthesia OR postanesthesia OR surgery OR surgeries OR surgical OR operation OR operations) OR "surgery"[subheading] OR "surgical procedures, operative"[Mesh])) OR ((agitat*[tw] AND emergence[tw])) OR ((emergence[tw] AND excitement[tw])) OR ((postanesthe*[tw] AND excitement[tw])) OR ((post-anesthe*[tw] AND excitement[tw])) OR ((postanaesthe*[tw] AND excitement[tw])) OR ((post-anaesthe*[tw] AND excitement[tw])) OR ((postop*[tw] AND agitat*[tw])) OR ((post-op*[tw] AND agitat*[tw])) OR ((postsurg*[tw] AND agitat*[tw])) OR ((post-surg*[tw] AND agitat*[tw])) OR ((postanesth*[tw] AND agitat*[tw])) OR ((post-anesth*[tw] AND agitat*[tw])) OR ((postanaesth* AND agitat*[tw])) OR ((post-anaesth* AND agitat*[tw])) OR ((emergence[tw] AND agitation[tw])) OR ((emergence[tw] AND delirium[tw]))) AND (((Infant[Mesh]) OR (Child[Mesh]) OR (Adolescent[Mesh]) OR ("Child, Preschool"[Mesh:NoExp]) OR ("Adolescent Health	33

	<p>Services"[Mesh:NoExp]) OR ("Adolescent Health"[Mesh:NoExp]) OR ("Adolescent Medicine"[Mesh:NoExp]) OR ("Adolescent, Hospitalized"[Mesh:NoExp]) OR ("Adolescent, Institutionalized"[Mesh:NoExp]) OR ("Child, Hospitalized"[Mesh:NoExp]) OR ("Child, Institutionalized"[Mesh:NoExp]) OR ("Child Care"[Mesh]) OR ("Child Health Services"[Mesh]) OR ("Child Welfare"[Mesh]) OR ("Infant Welfare"[Mesh]) OR ("Maternal Health Services"[Mesh]) OR ("Maternal Welfare"[Mesh]) OR ("Maternal-Child Health Centers"[Mesh]) OR ("Maternal-Child Nursing"[Mesh]) OR (Pediatrics[Mesh]) OR (Neonatology[Mesh:NoExp]) OR (Perinatology[Mesh:NoExp]) OR ("Schools, Nursery"[Mesh:NoExp]) OR ("early intervention (education)"[Mesh:NoExp]) OR ((boy[tw] OR boys[tw])) OR ((girl[tw] OR girls[tw])) OR ((gradeschool*[tw] OR "grade school*" [tw])) OR ((highschool*[tw] OR "high school*" [tw])) OR ((kid[tw] OR kids[tw])) OR ((minor[tw] OR minors[tw])) OR ((youth*[tw] OR youths*[tw])) OR (adolescen*[tw]) OR (babies[tw]) OR (baby*[tw]) OR ((child[tw] OR childhood*[tw] OR children*[tw])) OR ("elementary school*" [tw]) OR (infanc*[tw]) OR (infant*[tw]) OR ("junior high*" [tw]) OR (juvenile*[tiab]) OR (kindergarten*[tw]) OR ("middle school*" [tw]) OR (neonat*[tw]) OR (neo- nat*[tw]) OR (newborn*[tw]) OR (new-born*[tw]) OR ("nursery school*" [tw]) OR (paediatr*[tw]) OR (pediatr*[tw]) OR (perinatal*[tw]) OR (peri-natal*[tw]) OR (preadoles*[tw]) OR (pre-adoles*[tw]) OR (premie[tw]) OR (premies[tw]) OR (premie*[tw]) OR (preschool*[tw]) OR (pre-school*[tw]) OR (schoolage*[tw]) OR (schoolchild*[tw]) OR ("senior high*" [tw]) OR (stepchild*[tw]) OR (teen*[tiab]) OR (toddler*[tw]) OR (weanling*[tw]))) AND (((Biostatistics[Mesh:NoExp]) OR (Calibration[Mesh:NoExp]) OR ("Cluster Analysis"[Mesh:NoExp]) OR ("Critical Pathways"[Mesh:NoExp]) OR ("Data Interpretation, Statistical"[Mesh:NoExp]) OR ("Decision Support Techniques"[Mesh:NoExp]) OR ("Decision Theory"[Mesh:NoExp]) OR ("Discriminant Analysis"[Mesh:NoExp]) OR ("Disease-Free Survival"[Mesh:NoExp]) OR ("Evaluation Studies as Topic"[Mesh:NoExp]) OR ("Evaluation Studies"[pt]) OR (Benchmarking[Mesh]) OR ("Decision Trees"[Mesh]) OR ("Health Status Indicators"[Mesh]) OR ("Factor Analysis, Statistical"[Mesh:NoExp]) OR ("Failure to Rescue, Health Care"[Mesh:NoExp]) OR (Forecasting[Mesh:NoExp]) OR ("Kaplan-Meier Estimate"[Mesh:NoExp]) OR ("Karnofsky Performance Status"[Mesh:NoExp]) OR ("Life Tables"[Mesh:NoExp]) OR ("Likelihood Functions"[Mesh:NoExp]) OR ("Linear Models"[Mesh:NoExp]) OR ("Logistic Models"[Mesh:NoExp]) OR ("Markov Chains"[Mesh:NoExp]) OR ("Matched-Pair Analysis"[Mesh:NoExp]) OR ("Medical Futility"[Mesh:NoExp]) OR ("Models, Statistical"[Mesh:NoExp]) OR ("Monte Carlo Method"[Mesh:NoExp]) OR (Nomograms[Mesh:NoExp]) OR ("Odds Ratio"[Mesh:NoExp]) OR ("Organ Dysfunction Scores"[Mesh:NoExp]) OR ("Patient Acuity"[Mesh:NoExp]) OR ("Position-Specific Scoring Matrices"[Mesh:NoExp]) OR ("Pregnancy Outcome"[Mesh:NoExp]) OR ("Principal Component Analysis"[Mesh:NoExp]) OR (Probability[Mesh:NoExp]) OR ("Program Evaluation"[Mesh:NoExp]) OR ("Progression-Free Survival"[Mesh:NoExp]) OR ("Propensity Score"[Mesh:NoExp]) OR ("Proportional Hazards Models"[Mesh:NoExp]) OR ("Protective Factors"[Mesh:NoExp]) OR ("Quality-Adjusted Life Years"[Mesh:NoExp]) OR ("Regression Analysis"[Mesh:NoExp]) OR ("Reproducibility of Results"[Mesh:NoExp]) OR ("Risk Assessment"[Mesh:NoExp]) OR ("Risk Factors"[Mesh:NoExp]) OR (Risk[Mesh:NoExp]) OR ("Roc Curve"[Mesh:NoExp]) OR ("Sickness Impact Profile"[Mesh:NoExp]) OR ("Signal-To-Noise Ratio"[Mesh:NoExp]) OR ("Simplified Acute Physiology Score"[Mesh:NoExp]) OR ("Survival Analysis"[Mesh:NoExp]) OR ("Survival Rate"[Mesh:NoExp]) OR (Survival[Mesh:NoExp]) OR (Uncertainty[Mesh:NoExp]) OR ("Validation Studies As Topic"[Mesh:NoExp]) OR ("Validation Studies"[pt]) OR ("near miss*" [tw]) OR ("acute physiology and chronic health evaluation"[tw]) OR ((adverse outcome* AND (index* OR indices))) OR ((bivariat*[tw] AND Gompertz*[tw]) OR ((critical AND (path OR paths OR pathway OR pathways))) OR ("decision tree"[tw]) OR ("decision trees"[tw]) OR (decision*[tw] AND aid*[tw]) OR (decision*[tw] AND analy*[tw]) OR (decision*[tw] AND model*[tw]) OR (decision*[tw] AND techni*[tw]) OR (logistic*[tw] AND model*[tw]) OR (logistic*[tw] AND regression*[tw]) OR</p>	
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	<p>((multivariab*[tw] AND Gompertz*[tw]) OR ((prediction[tw] AND (model[tw] OR tool[tw] OR rule[tw]))) OR ((predictive[tw] AND ("value of tests"[tw] OR model[tw]))) OR ((prognostic*[tw] AND (scor* OR index** OR indices OR rate* OR rating* OR model* OR tool*))) OR (prognostic*[tw] AND strateg*[tw]) OR ("receiver operating characteristic*" [tw]) OR (regression[tw] AND analy*[tw]) OR ((risk[tw] AND calculat*[tw])) OR ((risk AND (adjust* OR assess* OR scor* OR engine* OR equation* OR algorithm* OR table* OR function*))) OR ((roc[tw] AND curve*[tw]) OR ((validation[tw] OR discrimination[tw] OR calibration[tw]) OR (algorhythm*[tw]) OR (algorism*[tw]) OR (algorithm*[tw]) OR (APACHE[tw]) OR (Bayesian[tw]) OR ("bench mark*" [tw]) OR (benchmark*[tw]) OR (c-index*[tw]) OR (c-statistic*[tw]) OR (Charlson[tw]) OR ((comorbid*[tw] AND (index*[tw] OR indices[tw]))) OR ((co-morbid*[tw] AND (index*[tw] OR indices[tw]))) OR ("concordance statistic*" [tw]) OR ((Cox[tw] AND model*[tw])) OR ("decision tree*" [tw]) OR (Elixhauser[tw]) OR ("flow chart*" [tw]) OR (flowchart*[tw]) OR ("goodness of fit" [tw]) OR ("hazard* model*" [tw]) OR ("hazard* ratio*" [tw]) OR ("HL test*" [tw]) OR (Hosmer-Lemeshow*[tw]) OR ("Kaplan Meier*" [tw]) OR ("log-rank test*" [tw]) OR ("median survival time*" [tw]) OR (MODS[tw]) OR ("mortality index*" [tw]) OR ("mortality indices" [tw]) OR (MPM[tw]) OR (predict*[tw]) OR ("prognostic model*" [tw]) OR ("propensity score" [tw]) OR ("propensity scores" [tw]) OR ("propensity scoring" [tw]) OR ("random-effect* model*" [tw]) OR ("risk ratio" [tw]) OR ("risk ratios" [tw]) OR (SAPS[tw]) OR (SOFA[tw]))) AND (((adolescence[ti] OR adolescent[ti] OR adolescents[ti] OR babies[ti] OR baby[ti] OR child[ti] OR childhood[ti] OR children[ti] OR infancy[ti] OR infant[ti] OR infants[ti] OR neonatal[ti] OR neonatally[ti] OR neonate[ti] OR neonates[ti] OR newborn[ti] OR newborns[ti] OR paediatric[ti] OR paediatrician[ti] OR paediatricians[ti] OR paediatrics[ti] OR pediatric[ti] OR pediatrician[ti] OR pediatricians[ti] OR pediatrics[ti] OR teen[ti] OR teenage[ti] OR teenagers[ti] OR teens[ti]))) AND (((publisher[sb] NOT pubstatusnihms NOT pubstatuspmcsd NOT pmcbook) OR inprocess[sb] OR pubmednotmedline[sb] OR ((pubstatusnihms OR pubstatuspmcsd) AND publisher[sb])))</p>	
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ClinicalTrials.gov

8 Studies found for: **Active, not recruiting, Completed, Suspended, Terminated, Withdrawn, Unknown status Studies | Studies With Results | Emergence Delirium OR Emergence Agitation OR emergence excitement | Child**

https://clinicaltrials.gov/ct2/results?cond=Emergence+Delirium+OR+Emergence+Agitation+OR+emergence+excitement&term=&type=&rslt=With&recrs=d&recrs=g&recrs=h&recrs=e&recrs=i&recrs=m&age_v=&age=0&gndr=&intr=&titles=&outc=&spons=&lead=&id=&cntry=&state=&city=&dist=&locn=&strd_s=&strd_e=&prcd_s=&prcd_e=&sfpd_s=&sfpd_e=&lupd_s=&lupd_e=&sort=

WHO ICTRP

9 records for 9 trials found for: emergence delirium OR emergence agitation OR emergence excitement AND prediction

ProQuest Dissertations & Theses Global

63 results

("emergence delirium" OR "emergence agitation" OR "emergence excitement") AND predict* AND (adolescence OR adolescent OR adolescents OR babies OR baby OR boy OR boys OR child OR childhood OR children OR girl OR girls OR infancy OR infant OR infants OR neonatal OR neonatally OR neonate OR neonates OR newborn OR newborns OR paediatric OR paediatrician OR paediatricians OR paediatrics OR pediatric OR pediatrician OR pediatricians OR pediatrics OR teen OR teenage OR teenagers OR teens OR youth OR youths)

- Additional limits - Manuscript type: Doctoral dissertations
-

eAppendix 2. Summary of inclusion and exclusion criteria.

Inclusion Criteria

- Age of patients in study < 18 years
- Patients undergoing general anesthesia
- Study design is either
 - Randomized controlled trial
 - Cohort studies
 - Case-control studies
- Predictive models for emergence delirium (including discrimination and calibration data)
- Emergence delirium or emergence agitation is a study outcome
- Prediction model applied preoperatively or intraoperatively
- Outcome measured in PACU

Exclusion Criteria

- Editorials, Reviews, Abstracts or Conference Proceedings
- Ineligible study designs
 - Case-series
 - Case reports
 - Animal studies
- No relevant population or study setting
 - Age > 18 years
 - Pt not undergoing general anesthesia (e.g. sedation)
- No relevant intervention or outcome
 - No prognostic predictive model for emergence delirium reported
 - Report of diagnostic models for emergence delirium
 - Emergence delirium not reported
- Duplications
 - Assess Inclusion/Exclusion for only one of duplications
 - The rest should be excluded as duplications

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Risk prediction models for pediatric emergence delirium: a systematic review and meta-analysis

Maria-Alexandra Petre, Bibek Saha, Shugo Kasuya, Marina Englesakis, Nan Gai, Arie Peliowski, Kazuyoshi Aoyama

BACKGROUND:

Emergence delirium (ED) is a common complication occurring in approximately 25% of pediatric general anesthetics (GA)¹ and is associated with significant adverse effects including injury to the patient and personnel, damage to incision sites, exacerbated parental anxiety, and increased nursing requirements, further resulting in an increased burden on the healthcare system². Identifying which patients are at highest risk for developing ED will allow practitioners to effectively apply multimodal prophylaxis in order to decrease the incidence of this significant complication. While risk factors and predictive scores for the development of ED have been established²⁻⁴, no prior systematic review has been conducted to determine the validity of these prognostic prediction models.

METHODS:

Objectives:

1. To conduct a systematic review of all published prognostic predictive models for the development of emergence delirium in pediatric patients undergoing general anesthesia.
2. To determine the validity of prognostic models in predicting the incidence and severity of emergence delirium in pediatric patients undergoing general anesthesia.

Review questions:

1. For children <18 yo undergoing general anesthetic for surgical or imaging procedures, what are the discrimination and calibration characteristics of each available prognostic predictive model for the development of emergence delirium in the post-anesthesia care unit (PACU).

This systematic review will be conducted on the basis of the Cochrane Collaboration approach⁵. The results will be reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocols (PRISMA-P)⁶.

Searches:

Librarian services will be enlisted to conduct an extensive systematic search through 8 databases (Medline(Ovid), Pubmed, Embase, Cochrane Database of Systematic Reviews, Cochrane CENTRAL, PsycINFO(Ovid), Scopus(Elsevier) and Web of Science) starting from their inception. Furthermore, 3 databases will be searched for relevant recently completed or ongoing research (ClinicalTrials.gov, International Clinical Trials Registry Platform and ProQuest Dissertations and Theses). Search strategies will be built to contain 3 sets of terms reflecting our search questions including the prognostic prediction

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4 models, the target condition (emergence delirium), and the patient population (pediatric patients
5 undergoing general anesthesia). In addition, reference lists of relevant trials and reviews will be
6 scanned. De-duplication of articles will be undertaken using reference management software Covidence.
7 Please refer to **Appendix A** for search strategies for all databases.
8
9

10 **Condition or domain to be studied:**

11 Emergence delirium after general anesthetic is a common phenomenon in the pediatric population
12 associated with adverse effects including injury to the child and surgical site, parental anxiety and
13 dissatisfaction, and increased requirements for nursing care and healthcare cost.
14
15

16 **Population:**

17 *Inclusion:* Children < 18 yo of any ASA class who are undergoing general anesthetic for any surgical or
18 imaging procedures.
19
20

21 *Exclusion:* Adult populations \geq 18 yo or studies investigating sedation rather than general anesthesia.
22

23 **Interventions:**

24 *Inclusion:* This review will consider all studies investigating prognostic predictive models for emergence
25 delirium after general anesthesia and reporting discrimination and calibration data.
26
27

28 *Exclusion:* Any studies investigating diagnostic predictive models or diagnostic tools for emergence
29 delirium.
30

31 **Comparators:**

32 N/A
33
34

35 **Study designs:**

36 *Inclusion:* This review will include clinical trials, cohort or case-control studies of prediction model
37 development with or without external validation in independent data as well as studies of external
38 model validation with or without model updating published in full report in peer-reviewed journals
39 without language restriction.
40
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42 *Exclusion:* This review will exclude case-reports, case-series, reviews, and editorials as well as any trials
43 published only in abstract form or in non-peer reviewed journals.
44

45 **Primary outcome:**

46 *Inclusion:* The primary outcome will be the incidence of emergence delirium as defined by (1) clinician
47 diagnosis, (2) Pediatric Anesthesia Emergence Delirium (PAED) scale⁷ (3) 3-point scale⁸ or (4) 4-point
48 scales with the Aono⁹ or Watcha¹⁰ modifications. The results of the scores will be dichotomized into 2
49 categories ("ED present", "No ED").
50
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52 *Exclusion:* The review will exclude any studies investigating the development of post-operative
53 behavioural changes after the patient's stay in PACU.
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56 **Secondary outcome:**

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Further outcomes to be reviewed in the current study include severity of emergence delirium.

Timing:

Inclusion: The review will include any studies in which the application of the predictive prognostic model is applied in the preoperative or intraoperative setting to predict an outcome occurring in the PACU.

Exclusion: The review will exclude any studies in which the application of the predictive prognostic model is applied postoperatively and which examine the outcome outside of the PACU setting.

Study selection and data extraction:

Two reviewers (SK, BS) will independently screen all titles and abstracts retrieved in the literature search. All potentially relevant articles will then be retrieved in full-text format and be further independently evaluated for inclusion based on the above-mentioned inclusion and exclusion criteria. Cohen's kappa will be reported for agreement between the 2 reviewers. Any disagreement between the two reviewers will be resolved and adjudicated by a third reviewer (MAP, KA).

Study characteristics as well as primary and secondary outcomes data will be extracted from relevant studies using a standardized data collection form in accordance to the CHARMS (Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies) framework¹¹ and the Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis (TRIPOD) checklist¹² and consisting of the following information:

1. General information: study ID (first author's last name and year of publication), journal name, study settings (single- or multi-center, institutional specialization in pediatrics, country of enrollment, years of study enrollment)
2. PICOT: inclusion and exclusion criteria, number of patients in the study, population demographics (mean age, ASA class, types of procedures), detailed description anesthetic characteristics (type and dosages of anesthetic used for induction and maintenance; use and dosage of premedication; type of scale used (components, model development methodology, model evaluation methodology, time span of prediction, and intended moment for the use of the model), discrimination characteristics (area under receiver operating curve (AUC) or corresponding c-statistic with 95% confidence interval) and calibration characteristics (calibration plots, ratio between predicted vs observed incidence of emergence delirium or the Hosmer-Lemeshow goodness-of-fit statistic); and outcomes (incidence of emergence delirium, mean emergence delirium scores)
3. Risk of bias assessment information: data on risk of bias and applicability across 4 domains including study *participants* (appropriateness of data sources used and study inclusion/exclusion criteria, similarity of participants and setting to the review question), *predictors* (adequately defined for all participants, assessment made without knowledge of outcome, availability of predictors at intended time of model use, similarity of predictor definition/assessment/timing to review question), *outcome* (adequate definition used in similar way for all patients, outcome definition excludes predictors, adequate time period between predictor assessment and outcome determination, similarity of outcome definition/timing/determination to review), and *analysis* (events per value, management of continuous and categorical predictor values,

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inclusion of all enrolled patients, appropriate management of missing data, selection of predictors based on multivariate analysis, appropriate accounting for censoring/competing risks/sampling of control participants, appropriate determination of calibration and determination data, accounting for model overfitting and optimism in model performance, predictors' assigned weights in the model correspond to reported multivariate analysis)

4. Potential effect modifiers: setting of validation including pediatric hospital or general hospital setting; use of anesthetic adjuncts including midazolam, propofol and dexmedetomidine as well as timing of administration of these agents; pain management including measurement scales, mean pain scores, and usage and dose of analgesics

The authors of final eligible studies will be contacted for data extraction, if needed.

Assessment of methodological quality:

The methodological quality of the evidence will be determined using the PROBAST (Prediction model study Risk Of Bias Assessment Tool) framework. This consists of first determining the usability of the risk prediction model based on the risk of bias and concerns of applicability across 4 domains (participants, predictors, outcome, analysis) followed by a determination of the model's predictive performance (discrimination and calibration)¹³. The model will be considered to be "usable" if it has a low risk of bias, low concern about applicability and good predictive performance (defined as $AUC \geq 0.8$ and ratio between observed and predicted incidence of ED of ~ 1.0). In the absence of discrimination or calibration data, the usability of the model will be designated as "maybe" if it has low concern of applicability and low risk of bias¹⁴.

Data synthesis:

The performance of each model will be reported including discrimination and calibration statistics with their corresponding 95% CI or standard error. For all models investigated in at least 3 studies where AUC is either reported or calculatable, the AUC will be pooled on the logit scale and standard errors of the logit transformed AUC will be calculated. The AUC will then be summarized using inverse variance method random effects model to allow for possible heterogeneity¹⁵ with restricted maximum likelihood (REML) estimation and the Hartung-Knapp-Sidik-Jonkman method. Where discrimination or calibration data may be missing, these will be jointly synthesized using multivariate meta-analysis to increase summary estimate precision. The 95% prediction interval will also be calculated to provide a range for potential model performance in any new validation studies¹⁵.

Assessment of heterogeneity:

Clinical heterogeneity across eligible studies will be assessed by examining details of participants and baseline characteristics including hospital specialization in pediatrics, timing of predictor measurement (preoperative only vs intraoperative and preoperative predictors), coadministration of adjuncts (midazolam, dexmedetomidine, fentanyl, TIVA), and pain management. Statistical heterogeneity in direct comparisons will be explored with univariate tests for heterogeneity such as the Cochrane Q (chi-square) test and the estimates of the I^2 statistic. Statistical heterogeneity will be considered moderate when $I^2=50-74\%$ and high when $I^2 \geq 75\%$.

Subgroup analyses and sensitivity analyses:

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4 Subgroup analysis will be conducted for the primary outcome to assess the impact of the distribution of
5 the effect modifiers including hospital specialization in pediatrics, timing of predictor measurements
6 (preoperative predictors only vs intraoperative and preoperative predictors), and coadministration of
7 anesthetic adjuncts (including midazolam, dexmedetomidine, propofol, TIVA), and adequacy of pain
8 management.
9

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11 Sensitivity analyses will be conducted by excluding trials with high risk of bias.
12

13 **Software:**

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15 References will be collected and de-duplicated using Covidence software. Statistical analysis will be
16 conducted using Review Manager v5.3.
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18 **Keywords:**

19 emergence delirium, emergence agitation, pediatrics, general anesthetic, prognostic models, predictive
20 models, discrimination, calibration
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REFERENCES:

1. Ortiz AC, Atallah AN, Matos D, da Silva EM. Intravenous versus inhalational anaesthesia for paediatric outpatient surgery. *Cochrane database Syst Rev* [Internet] 2014; **2**: CD009015 Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24510622>
2. Voepel-Lewis T, Malviya S, Tait AR. A prospective cohort study of emergence agitation in the pediatric postanesthesia care unit. *Anesth Analg* [Internet] 2003; **96**: 1625–30 Available from: <http://content.wkhealth.com/linkback/openurl?sid=WKPTLP:landingpage&an=00000539-200306000-00016>
3. Hino M, Mihara T, Miyazaki S, et al. Development and Validation of a Risk Scale for Emergence Agitation after General Anesthesia in Children: A Prospective Observational Study. *Anesth Analg* 2017; **125**: 550–5
4. Kain ZN, Caldwell-Andrews AA, Maranets I, et al. Preoperative anxiety and emergence delirium and postoperative maladaptive behaviors. *Anesth Analg* 2004; **99**: 1648–54
5. Higgins JP, Green S. *Cochrane Handbook for Systematic Reviews of Interventions* v5.1.0. 2011.
6. Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015; **4**: 148–60
7. Sikich N, Lerman J. Development and psychometric evaluation of the pediatric anesthesia emergence delirium scale. *Anesthesiology* 2004; **100**: 1138–45
8. Cohen IT, Finkel JC, Hannallah RS, Hummer KA, Patel KM. Rapid emergence does not explain agitation following sevoflurane anaesthesia in infants and children: A comparison with propofol. *Paediatr Anaesth* 2003; **13**: 63–7
9. Aono J, Ueda W, Mamiya K, Takimoto E, Manabe M. Greater incidence of delirium during recovery from sevoflurane anesthesia in preschool boys. *Anesthesiology* 1997; **87**: 1298–300
10. Watcha MF, Ramirez-Ruiz M, White PF, Jones MB, Lagueruela RG, Terkonda RP. Perioperative effects of oral ketorolac and acetaminophen in children undergoing bilateral myringotomy. *Can J Anaesth* 1992; **39**: 649–54
11. Moons KGM, de Groot JAH, Bouwmeester W, et al. Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies: The CHARMS Checklist. *PLoS Med* 2014; **11**
12. Collins GS, Reitsma JB, Altman DG, Moons KGM. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): The TRIPOD Statement. *Eur Urol* 2015; **67**: 1142–51
13. Moons KGM, Wolff RF, Riley RD, et al. PROBAST : A Tool to Assess Risk of Bias and Applicability of Prediction Model Studies : Explanation and Elaboration. *Ann Intern Med* 2019; **170**: W1-33
14. Aoyama K, D'Souza R, Pinto R, et al. Risk prediction models for maternal mortality: A systematic review and meta-analysis. *PLoS One* [Internet] 2018; **13**: e0208563 Available from: <http://dx.plos.org/10.1371/journal.pone.0208563>
15. Debray TPA, Damen JAAG, Snell KIE, et al. A guide to systematic review and meta-analysis of

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prediction model performance. *BMJ* 2017; **356**

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APPENDIX B. Summary of inclusion and exclusion criteria

Inclusion Criteria

- Age of patients in study < 18 years
- Patients undergoing general anesthesia
- Study design is either
 - Randomized controlled trial
 - Cohort studies
 - Case-control studies
- Prognostic predictive models for emergence delirium (including discrimination and calibration data)
- Emergence delirium is a study outcome
- Prediction model applied preoperatively or intraoperatively
- Outcome measured in PACU

Exclusion Criteria

- Editorials, Reviews, Abstracts or Conference Proceedings
- Ineligible study designs
 - Case-series
 - Case reports
 - Animal studies
- No relevant population or study setting
 - Age > 18 years
 - Pt not undergoing GA (ex sedation)
- No relevant intervention or outcome
 - No prognostic predictive model for emergence delirium reported
 - Report of diagnostic models for emergence delirium
 - Emergence delirium not reported
- Duplications
 - Assess Inclusion/Exclusion for only one of duplications
 - The rest should be excluded as duplications

Petre, Saha, Kasuya, Englesakis, Gai, Peliowski, Aoyama
Risk prediction in pediatric emergence delirium, July 14, 2019
DRAFT PROTOCOL FOR PROSPERO

APPENDIX A. Sample database search strategies

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PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7, Appendix2
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6, Appendix1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7, 8
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7, 8
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	8
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	7, 8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ² for each meta-analysis).	8



PRISMA 2009 Checklist

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Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7, 8
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9, Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICO, follow-up period) and provide the citations.	9-11, Table 1, 2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	11, Table 2, eTable 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	9-11, Table 1, 2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-13
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	13, 14
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data, role of funders for the systematic review).	2

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097



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BMJ Open

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Title: Risk prediction models for emergence delirium in pediatric general anesthesia: a systematic review

Running title: Predicting pediatric emergence delirium

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Main text (2114 words), Abstract (293 words)

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3 **Abstract: (293 <300 words)**
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6 **Objectives:** Emergence delirium (ED) occurs in approximately 25% of pediatric general
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8 anesthetics and has significant adverse effects. The goal of the current systematic review was to
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10 identify the existing literature investigating performance of predictive models for the
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12 development of pediatric (ED) following general anesthesia, and to determine their usability.
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15 **Design:** Systematic review using the Prediction model study Risk Of Bias Assessment Tool
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17 (PROBAST) framework.
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20 **Data sources:** Medline(Ovid), PubMed, Embase (Ovid), Cochrane Database of Systematic
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22 Reviews (Ovid), Cochrane CENTRAL (Ovid), PsycINFO (Ovid), Scopus (Elsevier) and Web of
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24 Science(Clarivate Analytics), ClinicalTrials.gov, International Clinical Trials Registry Platform,
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26 and ProQuest Digital Dissertations and Theses International through November 17, 2020.
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29 **Eligibility criteria for selecting studies:** All randomized controlled trials and cohort studies
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31 investigating predictive models for the development of ED in children undergoing general
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33 anesthesia.
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36 **Data extraction and synthesis:** Following title, abstract and full text screening by two
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38 reviewers, data were extracted from all eligible studies, including demographic parameters,
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40 details of anesthetics, and performance characteristics of the predictive scores for ED. Evidence
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42 quality and predictive score usability were assessed according to the PROBAST framework.
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45 **Results:** The current systematic review yielded 9242 abstracts, of which only 1 study detailing
46
47 the development and validation of the Emergence Agitation Risk Scale (EARS) met the
48
49 inclusion criteria. EARS had good discrimination with c-index of 0.81 (95% CI, 0.72-0.89).
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51 Calibration showed a non-significant Homer-Lemeshow goodness-of-fit test (P= 0.97). Although
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53 the EARS demonstrated low concern of applicability, the high risk of bias compromised the
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3 overall usability of this model.
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5 **Conclusions:** The current systematic review concluded that EARS has good discrimination
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7 performance but low usability to predict ED in a pediatric population. Further research is
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9 warranted to develop novel models for the prediction of emergence delirium in pediatric
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11 anesthesia.
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14 **Registration number:** PROSPERO registry CRD42019141950.
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Strengths and limitations of this study

- This is a first systematic review of risk prediction models for pediatric emergence delirium and adheres to recommendations made in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.
- An extensive systematic literature search was conducted through 11 databases including Medline(Ovid), Embase (Ovid), and Web of Science (Clarivate Analytics) from their inception to November 17, 2020.
- The current systematic review employed the Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies (CHARMS) for data extraction and the Prediction model study Risk of Bias Assessment Tool (PROBAST) which determines the usability of the prediction models identified in the systematic review.
- Our systematic review revealed only one study reporting the performance characteristics of the Emergence Agitation Risk Scale, a predictive model with low usability for predicting the development of pediatric emergence delirium.
- Our results serve to highlight the need for the ongoing development and validation of robust predictive models for pediatric emergence delirium risk.

Introduction:

Emergence delirium (ED) is a common complication occurring in approximately 25% of pediatric general anesthetics (GA)[1] and is associated with significant adverse effects including injury to the patient and personnel, damage to incision sites, exacerbated parental anxiety, and increased nursing requirements, further resulting in an increased burden on the healthcare system[2,3]. Identifying which patients are at highest risk for developing ED will allow practitioners to effectively apply multimodal prophylaxis in order to decrease the incidence of this significant complication.

Several risk factors have been identified for the development of ED, including age, preoperative anxiety, type of surgery, and type of anesthetic given[2,4]. Development of predictive scores which aim to integrate these risk factors to determine an individual's overall risk for developing ED has been attempted. However, no prior systematic review has been conducted to determine the usability of these prediction models.

The aim of the current study is to conduct a systematic review to identify all existing prediction models for the development of ED in a pediatric population, assess model performance and determine the usability of these models for use in clinical practice.

Methods:

The protocol for the current study was registered in the PROSPERO registry (CRD42019141950 available at https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=141950).

The results were reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols (PRISMA-P) 2015 statement[5].

Search strategy:

An information specialist with experience in systematic reviews searched 8 databases (Medline(Ovid), PubMed, Embase (Ovid), Cochrane Database of Systematic Reviews (Ovid), Cochrane CENTRAL (Ovid), PsycINFO (Ovid), Scopus (Elsevier) and Web of Science(Clarivate Analytics) starting from their inception. Furthermore, 3 databases were searched for relevant recently completed or ongoing research (ClinicalTrials.gov, International Clinical Trials Registry Platform, and ProQuest Digital Dissertations and Theses International. All searches were conducted on May 17, 2019 and updated on November 17, 2020. Search strategies were built to contain 3 sets of terms reflecting our search questions including the prediction models, the target condition (emergence delirium, emergence agitation), and the patient population (pediatric patients undergoing general anesthesia). Since emergence delirium and emergence agitation are sometimes used interchangeably in older literature, both these terms were included in our search strategy. In addition, reference lists of relevant trials and reviews were scanned. Refer to eAppendix 1 for search strategies for all databases.

Study selection and data extraction

Title, abstract and full text screening were independently conducted by 2 reviewers (SK, BS) with conflicts resolved by a third reviewer (MAP). Cohen's kappa was calculated to quantify the inter-rater reliability[6].

Inclusion criteria were: randomized controlled trials (RCT), cohort studies or case-control studies examining pediatric populations (<18 years old) undergoing general anesthesia investigating preoperative or intraoperative predictive models for the development of emergence delirium (ED) or emergence agitation (EA) in the post-anesthetic care unit (PACU). Inclusion and exclusion criteria are detailed in the eAppendix 2.

Study characteristics as well as primary and secondary outcomes data were extracted from relevant studies using a standardized data collection form in accordance to the Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies (CHARMS) framework[7] and the Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis (TRIPOD) checklist[8]. These included demographic information, anesthetic characteristics (type and dosages of anesthetic used for induction and maintenance, use and dosage of premedication); type of scale used (components, model development methodology, model evaluation methodology, time span of prediction, and intended moment for the use of the model), discrimination characteristics (area under receiver operating curve (AUC) or corresponding c-statistic with 95% confidence interval) and calibration characteristics (calibration plots, ratio between predicted vs observed incidence of emergence delirium, or Hosmer-Lemeshow goodness-of-fit statistic).

Assessment of methodologic quality

The methodological quality of the evidence was determined using the Prediction model study Risk Of Bias Assessment Tool (PROBAST) framework.[9] This consists of first determining the usability of the risk prediction model based on the risk of bias and concerns of applicability across 4 domains (participants, predictors, outcome and analysis) followed by a determination of the model's predictive performance (discrimination and calibration)[9]. The model was considered to be “usable” if it had a low risk of bias, low concern about applicability, and good predictive performance of discrimination and calibration. Good discrimination is defined as $AUC \geq 0.8$ [10,11].

Software

References were collected and de-duplicated using Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia).

Patient and public involvement:

It was not appropriate, possible or necessary to involve patients or the public in the design or conduct of this study, or to disseminate the results to them.

Results:

Search results

The literature search yielded 9242 citations, which, following title, abstract and full-text screening, yielded 1 study that met the inclusion criteria. The PRISMA flow diagram is shown in Figure 1. Four full-text articles were excluded due to irrelevant populations[12], model being applied post-operatively[13] and lack of reported discrimination or calibration data[4,14] (Table 1). The eligible paper investigated the development and validation of the Emergence Agitation Risk Scale (EARS).[15] Cohen's kappa showed good agreement between the two reviewers (kappa = 0.99).

The EARS

The included study, published in 2017, was a Japanese, single-center, pediatric hospital-based study detailing the development and validation of the Emergence Agitation Risk Scale (EARS). It comprised a total of 220 patients ASA class I or II patients with mean ages 4.1 ± 1.8 years and undergoing minor surgery including tonsillectomy, adenoidectomy, myringotomy tube insertion, strabismus surgery, cryptorchidism repair and inguinal hernia repair under general anesthesia. Anesthetic induction consisted of sevoflurane and nitrous oxide inhalation without premedication while maintenance was achieved with sevoflurane. Analgesia consisted of intravenous fentanyl, acetaminophen suppository and nerve blocks wherever indicated. The outcome of interest, EA, was measured in the PACU using the Pediatric Anesthesia Emergence Delirium (PAED) scale with a cutoff of >12 and had an overall incidence of 36.4%.[16] Study characteristics are detailed in Table 2.

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3 Development of EARS was conducted retrospectively in a cohort of 120 patients previously
4 enrolled in an RCT investigating the use of acupuncture in the prevention of emergence agitation
5 in children.[17] Logistic regression was used to test the ten candidate predictors including age,
6 height, weight, sex, Pediatric Anesthesia Behaviour (PAB) score, operative procedure, anesthesia
7 time, airway securing device (ETT or LMA), presence or absence of nerve block use, and total
8 fentanyl dose. The Akaike information criterion stepwise selection was used to identify 4
9 independently associated predictors for final inclusion in the EARS (age, PAB score, anesthesia
10 time and operative procedure). β -Coefficients were calculated and converted to integer scores for
11 each predictor, yielding a score range of 1 to 23.
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24 The validation phase of the score was conducted separately in a prospective observational cohort
25 of 100 patients.
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28 29 30 Study findings

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32 The development phase study population had mean age 3.7 ± 1.7 years and incidence of EA of
33 34.2%. The c-statistic was 0.84 (95% CI 0.74-0.94) and Hosmer-Lemeshow statistic was
34 nonsignificant ($p = 0.97$), indicating adequate discrimination and calibration, respectively.
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40 The validation phase study population had mean age 4.5 ± 1.9 years and EA incidence of 39%.
41 The c-statistic for the validation phase was 0.81 (95% CI 0.72-0.89). The optimum cutoff point
42 was found to be 11, yielding 87% sensitivity and 61% specificity for the development of ED.
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44 The grey zone, delimited by the points of the scale where the sensitivity and specificity become
45 90%, was 10 to 13 and comprised 38% of patients. Calibration data was not reported for the
46 validation phase.
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53 54 55 Score usability

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3 Usability analysis based on PROBAST criteria, revealed low concern of applicability across all 3
4 domains probed (participants, predictors, outcomes). However, there was a high risk of bias,
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6 primarily due to deficits in the analysis domain. In particular, the number of events (n=41) per
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8 candidate predictor (n=10) during the development phase was 4.1 (at least 10 and preferably 20
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10 would be considered adequate). Furthermore, during the validation phase the population size was
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12 inadequate, yielding only 39 patients experiencing the primary outcome, which fell short of the
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14 recommended 100 patients experiencing the outcome of interest. The authors did not present a
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16 calibration plot to illustrate the goodness-of-fit associated with the statistically significant
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18 Hosmer-Lemeshow statistic. And lastly, the authors did not account for overfitting and optimism
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20 in the context of the small events per candidate predictor. (eTable 1)
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27 Taken together, given the good discrimination performance but insufficient calibration
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29 evaluation, as well as the high risk of bias despite a low concern of applicability of the model to
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31 pediatric populations for predicting EA, the EARS was given a designation of low “usability”
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33 (Table 3).
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Discussion:

The current systematic review revealed only one scale targeted at predicting the risk of developing emergence delirium in children, a complication associated with significant morbidity occurring in approximately 25% of pediatric general anesthetics. The PROBAST assessment of usability indicated that the discriminative performance and applicability of the scale were both good, but insufficient calibration evaluation and deficiencies in the analysis placed the scale at high risk of bias, reducing its overall usability in clinical practice.

To date, this has been the only systematic review looking at prediction scales of ED in a pediatric population. The review was extensive, including 8 major databases of peer-reviewed literature as well as 3 databases of protocols, with the search including both emergence delirium as well as emergence agitation, which have been interchangeably used in previous literature. The study protocol was published in the PROSPERO database before the start of the review. The review processed used rigorous methodology, employing 2 independent reviewers and careful adherence to the PRISMA[5], CHARMS[7], TRIPOD[8] and PROBAST[9] guidelines for systematic reviews and prediction scales. While the scale was found to have low usability, the current study highlights potential required improvements in the methodology of future studies validating the EARS, with problems arising from high risk of bias due to the analysis phase. Particular attention should be given to the number of events per variable to avoid the risk of over- and under-fitting of the model.

A considerable limitation of the current review was that only 1 study investigating a single predictive model was found, which met all the inclusion criteria. While this hampered our ability to run a meta-analysis on the predictive properties of the scale, a need for further validation in other settings is underscored, as is the need for the development of other scales in this domain.

Literature in this domain may have been previously lacking due to considerable variations in the definition of emergence delirium, with different diagnostic scales being used, although the PAED scale is the only validated scale to diagnose ED in children at the moment.[16] Furthermore, several confounding factors are present in the postoperative period, which makes timely and accurate diagnosis of pediatric ED difficult in clinical and also research settings.[1-3] As such, strategic prevention of pediatric ED based on a precise and validated prediction scale is preferable to treatment when the event occurs.

The current systematic review highlights several potential clinical and research implications. The first is the need to identify validated risk factors for ED based on prior research, which can then be used to generate new prediction models using prospective cohort methodology to accurately and precisely identify those patients at the highest risk for developing this side effect.

Important lessons can be drawn from the three studies excluded in our systematic review due to a lack of reported discrimination and calibration parameters. Discrimination and calibration characteristics are essential features in the assessment of the usability of a predictive scale. Discrimination values such as the area under the receiver operating curve or the C-statistic indicate how well a model differentiates those patients who are likely to develop a condition in comparison to those who are not likely to develop a condition. Calibration, on the other hand, as measured by a visual representation of the relationship between observed and predicted values and by the Hosmer-Lemeshow statistic, is a measure of the scale's ability to predict the absolute risk of developing the endpoint in question. The results of this study indicate that future scale development and validation should include a systematic assessment of the predictive properties of such scales. Indeed, following the analytic guidance provided by the PROBAST guidelines would ensure the analytic rigor required to incorporate these scores into clinical practice.

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3 Lastly, future research, quality improvement projects and cost-benefit analyses should focus on
4 determining whether implementing such scales into clinical practice to help target prophylaxis
5 and treatment of emergence delirium results in improved patient outcomes with adequate
6 applicability and acceptability of such scales into clinical practice.
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13 In conclusion, the current systematic review has revealed a single study of predictive scores for
14 the development of pediatric emergence delirium. While this score showed low usability, our
15 results do highlight the need for the development of more such scales as well as the requirement
16 for methodologically rigorous validation of such scales.
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Competing interests:

All authors have completed the ICMJE uniform disclosure form at http://www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years, no other relationships or activities that could appear to have influenced the submitted work.

Contributions to authorship:

MAP, BS, SK, ME and KA: Study concept, protocol writing and registration, analysis and interpretation of the data, drafting of manuscript, manuscript revision, approval of final version.

NG and AP: Study concept, protocol writing, manuscript revision, approval of final version.

Ethics approval:

Not required given nature of the study design.

Data sharing statement:

All data of the current study is present in the main manuscript, figures, tables and online only supplemental material.

References:

- 1 Ortiz AC, Atallah AN, Matos D, *et al.* Intravenous versus inhalational anaesthesia for paediatric outpatient surgery. *Cochrane database Syst Rev* 2014;**2**:CD009015.
doi:10.1002/14651858.CD009015.pub2
- 2 Voepel-Lewis T, Malviya S, Tait AR. A prospective cohort study of emergence agitation in the pediatric postanesthesia care unit. *Anesth Analg* 2003;**96**:1625–30.
doi:10.1213/01.ANE.0000062522.21048.61
- 3 Vljakovic GP, Sindjelic RP. Emergence delirium in children: Many questions, few answers. *Anesth Analg* 2007;**104**:84–91. doi:10.1213/01.ane.0000250914.91881.a8
- 4 Kain ZN, Caldwell-Andrews AA, Maranets I, *et al.* Preoperative anxiety and emergence delirium and postoperative maladaptive behaviors. *Anesth Analg* 2004;**99**:1648–54.
doi:10.1213/01.ANE.0000136471.36680.97
- 5 Moher D, Shamseer L, Clarke M, *et al.* Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 2015;**4**:1.
doi:10.1186/2046-4053-4-1
- 6 O'Connor D, Green S, Higgins JP. Defining the Review Question and Developing Criteria for Including Studies. In: *Cochrane Handbook for Systematic Reviews of Interventions: Cochrane Book Series*. 2008. 81–94. doi:10.1002/9780470712184.ch5
- 7 Moons KGM, de Groot JAH, Bouwmeester W, *et al.* Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies: The CHARMS Checklist. *PLoS Med* 2014;**11**. doi:10.1371/journal.pmed.1001744

- 1
2
3 8 Collins GS, Reitsma JB, Altman DG, *et al.* Transparent reporting of a multivariable
4 prediction model for individual prognosis or diagnosis (TRIPOD): The TRIPOD
5 Statement. *Eur Urol* 2015;**67**:1142–51. doi:10.1016/j.eururo.2014.11.025
6
7
8
9
10
11 9 Moons KGM, Wolff RF, Riley RD, *et al.* PROBAST : A Tool to Assess Risk of Bias and
12 Applicability of Prediction Model Studies : Explanation and Elaboration. *Ann Intern Med*
13 2019;**170**:W1-33. doi:10.7326/M18-1377
14
15
16
17
18 10 Aoyama K, D’Souza R, Pinto R, *et al.* Risk prediction models for maternal mortality: A
19 systematic review and meta-analysis. *PLoS One* 2018;**13**:e0208563.
20
21 doi:10.1371/journal.pone.0208563
22
23
24
25
26 11 Hosmer DW, Lemeshow S, Sturdivant RX. Assessing the Fit of the Model. In: *Applied*
27 *Logistic Regression, 3rd Edition*. Hoboken, NJ, USA: : John Wiley & Sons 2013. 153 –
28 225.
29
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33 12 Oh SH, Park EJ, Jin Y, *et al.* Automatic delirium prediction system in a Korean surgical
34 intensive care unit. *Nurs Crit Care* 2014;**19**:281–91. doi:10.1111/nicc.12048
35
36
37
38 13 Sadhasivam S, Cohen LL, Szabova A, *et al.* Real-time assessment of perioperative
39 behaviors and prediction of perioperative outcomes. *Anesth Analg* 2009;**108**:822–6.
40
41 doi:10.1213/ane.0b013e318195c115
42
43
44
45
46 14 Beringer RM, Greenwood R, Kilpatrick N. Development and validation of the Pediatric
47 Anesthesia Behavior score - An objective measure of behavior during induction of
48 anesthesia. *Paediatr Anaesth* 2014;**24**:196–200. doi:10.1111/pan.12259
49
50
51
52
53 15 Hino M, Mihara T, Miyazaki S, *et al.* Development and Validation of a Risk Scale for
54
55
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57
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3 Emergence Agitation after General Anesthesia in Children: A Prospective Observational
4 Study. *Anesth Analg* 2017;**125**:550–5. doi:10.1213/ANE.0000000000002126
5
6
7
8
9 16 Sikich N, Lerman J. Development and psychometric evaluation of the pediatric anesthesia
10 emergence delirium scale. *Anesthesiology* 2004;**100**:1138–45. doi:10.1097/00000542-
11 200405000-00015
12
13
14
15
16 17 Hijikata T, Mihara T, Nakamura N, *et al.* Electrical stimulation of the heart 7 acupuncture
17 site for preventing emergence agitation in children. *Eur J Anaesthesiol* 2016;**33**:535–42.
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Tables:**Table 1.** Detailed explanations for studies excluded following full-text assessment.

Study reference	Predictive model investigated	Population	Reason for exclusion
Beringer et al, 2014 [14]	Pediatric Anesthesia Behavior (PAB) score	Children aged 2-12 yr undergoing general anesthesia for dental extractions	No discrimination or calibration parameters were reported
Kain et al, 2004 [4]	Yale Preoperative Anxiety Scale (mYPAS) and	Children undergoing surgery with general anesthesia	No discrimination or calibration parameters were reported
Oh et al, 2013 [12]	Automatic PREDiction of DELirium in Intensive Care Units (APREDEL-ICU)	Delirium in adult ICU setting	Irrelevant population
Sadhasivam et al, 2009 [13]	Perioperative Adult Child Behavioral Interaction Scale (PACBIS)	Children aged 3-12 yr undergoing general anesthesia for tonsillectomy and/or adenoidectomy	PACBIS measured in the recovery room concurrently with PAED score No discrimination or calibration parameters were reported

Table 2. Summary characteristics of studies included in systematic review.

Study	Score name and composition	Population	Inclusion & exclusion criteria	Anesthetic type	Outcome definition	Model development & validation	Model Performance
Hino et al, 2017	Emergence agitation risk scale (EARS): 1. Age 2. Operative procedure (strabismus surgery, tonsillectomy) 3. Preoperative behaviour score 4. Anesthesia time	N = 220 (120 during development and 100 during validation phases)	<u>Inclusion criteria:</u> 1.5–8 years old; ASA 1-2; undergoing general anesthesia for inguinal hernia repair, adenoidectomy, tonsillectomy, strabismus repair, tympanostomy tube, cryptorchidism, and other minor surgery <u>Exclusion criteria:</u> mental retardation; taking psychotropic drugs	Induction with N ₂ O and sevoflurane, maintenance with sevoflurane Analgesia with intravenous fentanyl and suppository acetaminophen, and nerve block where appropriate	PAED score > 12 as assessed by trained nurse or anesthesiologist in PACU <u>Incidence:</u> 34.2% of patients in the development phase 39% of patients in the validation phase	<u>Development phase:</u> 1. Data from prior randomized controlled trial 2. Multicollinearity between 10 candidate predictors: age, height, weight, sex, operative procedures (tonsillectomy, strabismus surgery, other), airway management (ETT, LMA), nerve block, fentanyl dose, anesthesia time, PAB score 3. Multivariate logistic regression with Akaike information criterion stepwise selection conducted to determine the optimal combination of 7 remaining predictors (age, sex, operative procedure, airway management, anesthesia time, PAB score) 4. Beta-coefficient was calculated for each predictor <u>Validation phase:</u> 1. Prospective cohort data. 2. Best cut-off point determined by Youden index 3. Gray zone identified as range between the two points on receiver operating curve where sensitivity and specificity are 90%	<u>Development phase:</u> Discrimination: C-index 0.84 (95% CI, 0.74-0.94) Calibration: Hosmer-Lemeshow goodness-of-fit test nonsignificant (p= 0.97) <u>Validation phase:</u> Discrimination: C-index 0.84 (95% CI, 0.74-0.94)

ASA, American Society of Anesthesiologists

CI, confidence interval

EARS, Emergence Agitation Risk Scale

ETT, endotracheal tube

LMA, laryngeal mask airway

PAB, Pediatric Anesthesia Behaviour Scale

PACU, post-anesthesia care unit

PAED, Pediatric Anesthesia Emergence Delirium scale

Table 3. Prediction model usability assessment.

Study	Predictive performance		Risk of bias	Applicability	Usability
	Discrimination	Calibration			
Hino et al, 2017 [15] EARS model	<u>Development:</u> C-index 0.84 (95% CI 0.74-0.94) <u>Validation:</u> C-index 0.81 (95% CI 0.72-0.89)	<u>Development:</u> Hosmer-Lemeshow p=0.97 <u>Validation:</u> Not reported	Overall high concern	Overall low concern	Low

CI, confidence interval

EARS, Emergence Agitation Risk Scale

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5 **Figure 1.** PRISMA flow diagram for search and review strategy.
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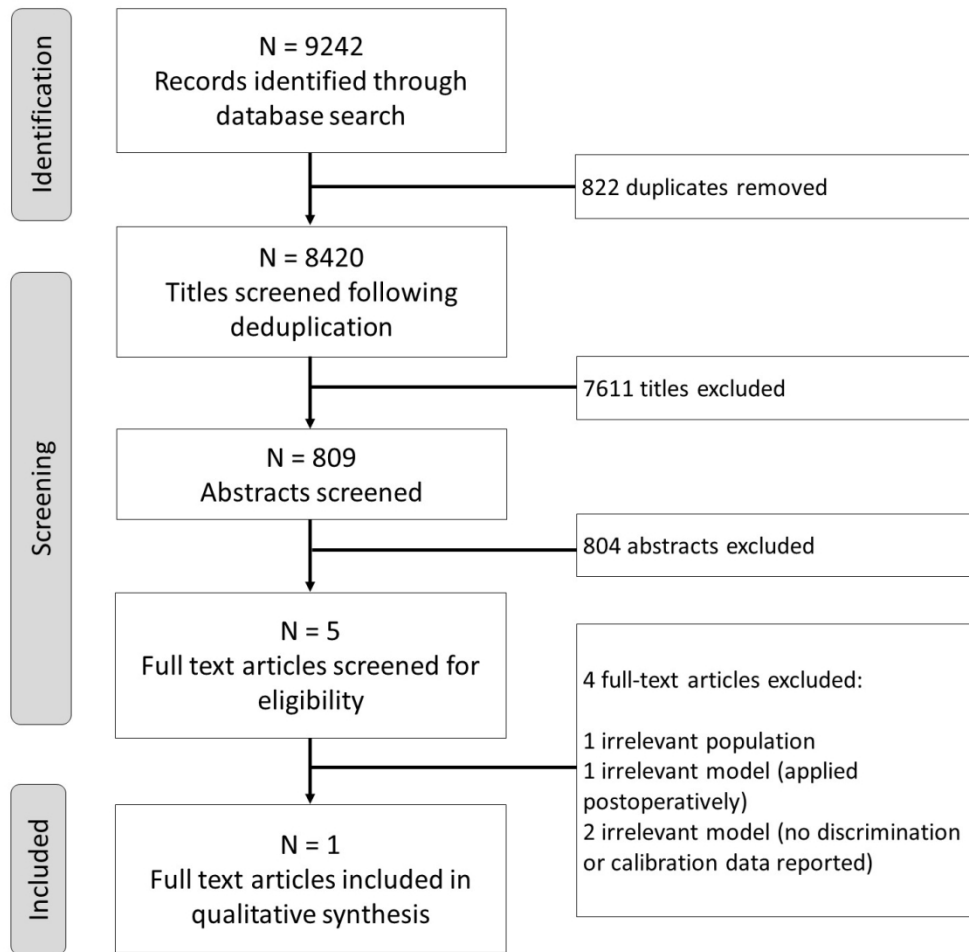
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7 **eTable 1.** PROBAST risk of bias and applicability assessment.
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9 **eAppendix 1.** Search strategies for each database.
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11 **eAppendix 2.** Summary of inclusion and exclusion criteria.
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For peer review only



PRISMA flow diagram for search and review strategy.

124x128mm (300 x 300 DPI)

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eTable 1. PROBAST risk of bias and applicability assessment.

Study	Hino et al, 2017 – EARS Model		
	Assessment	Judgement	Justification
Domain 1: Participant selection	Risk of Bias	Low concern	Data for the development phase were obtained from a previous randomized control trial while the validation phase was conducted in a prospective cohort study. Inclusion criteria were age 1.5-8 years, ASA I or II, patients without mental retardation, patients not taking psychotropic drugs, patients undergoing minor surgery and patients without premedication
	Applicability	Low concern	Included participants and setting are relevant to review question.
Domain 2: Predictors	Risk of Bias	Unclear	The score for all 4 predictors can reasonably be assumed to be determined before the outcome event and measurement. Whether predictor measurements were blinded to outcome occurrence is not stated.
	Applicability	Low concern	Predictor definition, assessment and timing are similar to review question.
Domain 3: Outcome	Risk of Bias	Unclear	No information is provided with regards to whether predictor information was known when determining the incidence of ED.
	Applicability	Low concern	PAED score used to determine the outcome is similar to review question
Domain 4: Analysis	Risk of Bias	High concern	Events per candidate variable = 4.1 In development phase, univariable comparisons for 10 candidate predictors was performed between those who were diagnosed with EA (n = 4.1) vs those who were not. Although subsequent assessment of multicollinearity reduced the number of predictors (highly correlated predictors were grouped), no predictors were eliminated in the univariable comparison and were then assessed via multivariate analysis. Only the p value for the Hosmer-Lemeshow goodness-of-fit test was provided without a calibration plot or table Although there was no examination of overfitting and optimism in model performance, this study quantified the model's predictive performance on both the data that was used to develop the model but also on a totally different external cohort. The final model appears to be based only on a selection of predictors from the multivariable regression analysis without refitting the smaller model.
Overall Judgement	Applicability	Low concern	
	Risk of Bias	High concern	

ASA, American Society of Anesthesiologists

CI, confidence interval

EA, emergence agitation

EARS, Emergence Agitation Risk Scale

eAppendix 1. Search strategies for each database.**Medline**

Ovid MEDLINE(R) 1946 to May 16, 2019

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	117
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	2167
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	3800
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	821
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	6626
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	8850
7	Anxiety/ci, de	2201
8	(emergence adj10 agitat*).mp.	321
9	(post?an?esthetic adj3 agitat*).mp.	10
10	(recovery adj10 agitat*).mp.	231
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	3562
12	(agitat* adj8 emergence).mp.	314

13	(emergence adj8 excitement?).mp.	22
14	(postan?esthe* adj8 excitement?).mp.	9
15	(post-an?esthe* adj8 excitement?).mp.	1
16	(postop* adj3 agitat*).mp.	146
17	(post-op* adj3 agitat*).mp.	11
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	12
21	(post-anesth* adj3 agitat*).mp.	3
22	(postanaesth* adj3 agitat*).mp.	5
23	(post-anaesth* adj3 agitat*).mp.	3
24	or/1-23 [Emergence Delirium & related terms]	24607
25	exp Infant/	1096466
26	exp Child/	1827951
27	exp Adolescent/	1932495
28	Child, Preschool/	879443
29	Adolescent Health Services/	5340
30	Adolescent Health/	780
31	Adolescent Medicine/	1498
32	Adolescent, Hospitalized/	431
33	Adolescent, Institutionalized/	126
34	Child, Hospitalized/	6427
35	Child, Institutionalized/	1853

36	exp Child Care/	18827
37	exp Child Health Services/	23209
38	exp Child Welfare/	30091
39	exp Infant Welfare/	2733
40	exp Maternal Health Services/	45957
41	exp Maternal Welfare/	6518
42	exp Maternal-Child Health Centers/	2295
43	exp Maternal-Child Nursing/	5686
44	exp Pediatrics/	55220
45	Neonatology/	2614
46	Perinatology/	1751
47	Schools, Nursery/	1450
48	"early intervention (education)"/	2756
49	(boy or boys).tw.	121514
50	(girl or girls).tw.	124129
51	(gradeschool* or grade school*).mp.	700
52	(highschool* or high school*).mp.	24966
53	(kid or kids).tw.	6041
54	(minor or minors).tw.	190909
55	(youth?? or youths?).mp.	59422
56	adolescen*.tw,hw,kw.	1963413
57	babies.jw.	0
58	babies.mp.	31842

59	baby*.jw.	1
60	baby*.mp.	34419
61	(child or childhood* or children*).tw,kw,hw.	2155171
62	elementary school*.mp.	7958
63	infanc*.jw.	293
64	infanc*.mp.	58220
65	infant*.jw.	7151
66	infant*.mp.	1180849
67	junior high*.mp.	2187
68	juvenile?.tw.	67839
69	kindergarten*.mp.	5162
70	middle school*.mp.	4323
71	neonat*.jw.	24610
72	neonat*.mp.	253352
73	neo-nat*.mp.	770
74	newborn*.jw.	0
75	newborn*.mp.	720054
76	new-born*.mp.	3761
77	nursery school*.mp.	1005
78	paediatr*.jw.	54794
79	paediatr*.mp.	52640
80	pediatr*.jw.	453821
81	pediatr*.mp.	283982

82	perinatal*.mp.	65985
83	peri-natal*.mp.	196
84	preadoles*.mp.	2681
85	pre-adoles*.mp.	934
86	premie.mp.	20
87	premies.mp.	17
88	premmie?.mp.	2
89	preschool*.mp.	881919
90	pre-school*.mp.	4304
91	schoolage*.mp.	64
92	schoolchild*.mp.	12228
93	senior high*.mp.	898
94	stepchild*.mp.	217
95	teen*.tw.	25318
96	toddler?.mp.	8178
97	weanling?.mp.	6636
98	or/25-97 [Children & related terms]	4167868
99	24 and 98 [Emergence Delirium + Children]	6074
100	"Healthcare Failure Mode and Effect Analysis"/	72
101	exp "Outcome and Process Assessment (Health Care)"/	1028066
102	"Predictive Value of Tests"/	190727
103	"Severity of Illness Index"/	227030
104	"Sensitivity and Specificity"/	335901

105	Actuarial Analysis/	6702
106	Adverse Outcome Pathways/	44
107	Algorithms/	236532
108	Apache/	5875
109	Area Under Curve/	37680
110	Bayes Theorem/	30560
111	Behavioral Risk Factor Surveillance System/	1875
112	Biostatistics/	1782
113	Calibration/	36307
114	Cluster Analysis/	58885
115	Critical Pathways/	6263
116	Data Interpretation, Statistical/	55040
117	Decision Support Techniques/	18752
118	Decision Theory/	910
119	Discriminant Analysis/	10006
120	Disease-Free Survival/	69123
121	Evaluation Studies as Topic/	121389
122	Evaluation Studies/	243149
123	exp Benchmarking/	12569
124	exp Decision Trees/	10548
125	exp Health Status Indicators/	285452
126	Factor Analysis, Statistical/	26405
127	Failure to Rescue, Health Care/	70

128	Forecasting/	81951
129	Kaplan-Meier Estimate/	60623
130	Karnofsky Performance Status/	2406
131	Life Tables/	6369
132	Likelihood Functions/	21158
133	Linear Models/	76683
134	Logistic Models/	130104
135	Markov Chains/	13386
136	Matched-Pair Analysis/	4702
137	Medical Futility/	2798
138	Models, Statistical/	87027
139	Monte Carlo Method/	26691
140	Nomograms/	2725
141	Odds Ratio/	85830
142	Organ Dysfunction Scores/	867
143	Patient Acuity/	902
144	Position-Specific Scoring Matrices/	482
145	Pregnancy Outcome/	47483
146	Principal Component Analysis/	23679
147	Probability/	54700
148	Program Evaluation/	59437
149	Progression-Free Survival/	765
150	Propensity Score/	6862

151	Proportional Hazards Models/	72481
152	Protective Factors/	3143
153	Quality-Adjusted Life Years/	11008
154	Regression Analysis/	125963
155	Reproducibility of Results/	375634
156	Risk Assessment/	241666
157	Risk Factors/	767032
158	Risk/	118662
159	Roc Curve/	52023
160	Sickness Impact Profile/	7026
161	Signal-To-Noise Ratio/	6677
162	Simplified Acute Physiology Score/	52
163	Survival Analysis/	126948
164	Survival Rate/	161964
165	Survival/	4586
166	Uncertainty/	11135
167	Validation Studies As Topic/	2013
168	Validation Studies/	94899
169	"near miss??" .mp.	1777
170	"acute physiology and chronic health evaluat*" .mp.	4052
171	(adverse outcome? adj (index?? or indices)).mp.	19
172	(bivariat* adj3 Gompertz*) .mp.	1
173	(critical adj2 (path or paths or pathway or pathways)).mp.	10410

174	(decision adj2 tree?).mp.	13977
175	(decision? adj2 aid?).mp.	4002
176	(decision? adj2 analy*).mp.	8868
177	(decision? adj2 model*).mp.	7502
178	(decision? adj2 techni*).mp.	19420
179	(logistic* adj2 model*).mp.	163493
180	(logistic* adj2 regression*).mp.	213519
181	(multivariab* adj3 Gompertz*).mp.	2
182	(prediction adj1 (model or tool or rule)).mp.	9728
183	(predictive adj1 (value of tests or model)).mp.	196685
184	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	16056
185	(prognostic* adj2 strateg*).mp.	184
186	receiver operating characteristic?.mp.	48350
187	(regression adj analy*).mp.	307106
188	(risk adj1 calculat*).mp.	2931
189	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	292497
190	(roc adj2 curve?).mp.	64491
191	(validation or discrimination or calibration).mp.	383952
192	algorhythm*.mp.	109
193	algorism*.mp.	52
194	algorithm*.mp.	303614
195	APACHE.mp.	9770

196	Bayesian.mp.	32551
197	bench mark*.mp.	274
198	benchmark*.mp.	32715
199	"c-index??.mp.	1965
200	"c-statistic?".mp.	4333
201	Charlson.mp.	6038
202	(comorbid* adj2 (index* or indices)).mp.	5581
203	(co-morbid* adj2 (index* or indices)).mp.	390
204	"concordance statistic?".mp.	165
205	(Cox adj2 model*).mp.	18279
206	decision tree?.mp.	13900
207	Elixhauser.mp.	336
208	flow chart?.mp.	1209
209	flowchart?.mp.	907
210	"goodness of fit".mp.	6113
211	hazard* model*.mp.	88073
212	hazard* ratio?.mp.	84520
213	"HL test*3".mp.	43
214	"Hosmer-Lemeshow*".mp.	1483
215	Kaplan Meier*.mp.	95791
216	log-rank test???.mp.	17574
217	median survival time?.mp.	11394
218	MODS.mp.	1583

219	mortality index???.mp.	271
220	mortality indices.mp.	113
221	MPM.mp.	2364
222	predict*.mp.	1273785
223	prognostic model*.mp.	3288
224	propensity scor*3.mp.	15045
225	random-effect* model*.mp.	18284
226	risk ratio?.mp.	19025
227	SAPS.mp.	2482
228	SOFA.mp.	2320
229	or/100-228 [Prediction Models & related terms]	4938313
230	99 and 229 [Emergence Delirium + Children + Prediction]	2012
231	limit 230 to "humans only (removes records about animals)"	1975
232	limit 231 to ("all adult (19 plus years)" or "young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)")	1104
233	limit 231 to pregnancy	267
234	232 or 233	1183
235	231 not 234	792
236	limit 231 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)")	1710
237	235 or 236	1765
238	limit 231 to children	1875
239	237 or 238	1894

240	remove duplicates from 239	1893
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Medline In-Process

Ovid MEDLINE(R) Epub Ahead of Print and In-Process & Other Non-Indexed Citations May 16, 2019

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	0
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	0
7	Anxiety/ci, de	0
8	(emergence adj10 agitat*).mp.	109
9	(post?an?esthetic adj3 agitat*).mp.	2
10	(recovery adj10 agitat*).mp.	56
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	719

12	(agitat* adj8 emergence).mp.	107
13	(emergence adj8 excitement?).mp.	4
14	(postan?esthe* adj8 excitement?).mp.	0
15	(post-an?esthe* adj8 excitement?).mp.	0
16	(postop* adj3 agitat*).mp.	41
17	(post-op* adj3 agitat*).mp.	10
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	5
21	(post-anesth* adj3 agitat*).mp.	2
22	(postanaesth* adj3 agitat*).mp.	0
23	(post-anaesth* adj3 agitat*).mp.	0
24	or/1-23 [Emergence Delirium & related terms]	850
25	exp Infant/	0
26	exp Child/	0
27	exp Adolescent/	0
28	Child, Preschool/	0
29	Adolescent Health Services/	0
30	Adolescent Health/	0
31	Adolescent Medicine/	0
32	Adolescent, Hospitalized/	0
33	Adolescent, Institutionalized/	0
34	Child, Hospitalized/	0

35	Child, Institutionalized/	0
36	exp Child Care/	0
37	exp Child Health Services/	0
38	exp Child Welfare/	0
39	exp Infant Welfare/	0
40	exp Maternal Health Services/	0
41	exp Maternal Welfare/	0
42	exp Maternal-Child Health Centers/	0
43	exp Maternal-Child Nursing/	0
44	exp Pediatrics/	0
45	Neonatology/	0
46	Perinatology/	0
47	Schools, Nursery/	0
48	"early intervention (education)"/	0
49	(boy or boys).tw.	13901
50	(girl or girls).tw.	14303
51	(gradeschool* or grade school*).mp.	72
52	(highschool* or high school*).mp.	4702
53	(kid or kids).tw.	1047
54	(minor or minors).tw.	23163
55	(youth?? or youths?).mp.	12161
56	adolescen*.tw,hw,kw.	36625
57	babies.jw.	0

58	babies.mp.	3149
59	baby*.jw.	0
60	baby*.mp.	4210
61	(child or childhood* or children*).tw,kw,hw.	130111
62	elementary school*.mp.	1324
63	infanc*.jw.	141
64	infanc*.mp.	5328
65	infant*.jw.	1016
66	infant*.mp.	32765
67	junior high*.mp.	256
68	juvenile?.tw.	8626
69	kindergarten*.mp.	960
70	middle school*.mp.	949
71	neonat*.jw.	3009
72	neonat*.mp.	21656
73	neo-nat*.mp.	32
74	newborn*.jw.	17
75	newborn*.mp.	11187
76	new-born*.mp.	503
77	nursery school*.mp.	63
78	paediatr*.jw.	6103
79	paediatr*.mp.	8690
80	pediatr*.jw.	30288

81	pediatr*.mp.	37343
82	perinatal*.mp.	6453
83	peri-natal*.mp.	21
84	preadoles*.mp.	305
85	pre-adoles*.mp.	144
86	premie.mp.	1
87	premies.mp.	1
88	premmie?.mp.	0
89	preschool*.mp.	3563
90	pre-school*.mp.	440
91	schoolage*.mp.	7
92	schoolchild*.mp.	971
93	senior high*.mp.	115
94	stepchild*.mp.	38
95	teen*.tw.	3191
96	toddler?.mp.	1464
97	weanling?.mp.	278
98	or/25-97 [Children & related terms]	265209
99	24 and 98 [Emergence Delirium + Children]	154
100	"Healthcare Failure Mode and Effect Analysis"/	0
101	exp "Outcome and Process Assessment (Health Care)"/	0
102	"Predictive Value of Tests"/	0
103	"Severity of Illness Index"/	0

104	"Sensitivity and Specificity"/	0
105	Actuarial Analysis/	0
106	Adverse Outcome Pathways/	0
107	Algorithms/	0
108	Apache/	0
109	Area Under Curve/	0
110	Bayes Theorem/	0
111	Behavioral Risk Factor Surveillance System/	0
112	Biostatistics/	0
113	Calibration/	0
114	Cluster Analysis/	0
115	Critical Pathways/	0
116	Data Interpretation, Statistical/	0
117	Decision Support Techniques/	0
118	Decision Theory/	0
119	Discriminant Analysis/	0
120	Disease-Free Survival/	0
121	Evaluation Studies as Topic/	0
122	Evaluation Studies/	26
123	exp Benchmarking/	0
124	exp Decision Trees/	0
125	exp Health Status Indicators/	0
126	Factor Analysis, Statistical/	0

127	Failure to Rescue, Health Care/	0
128	Forecasting/	0
129	Kaplan-Meier Estimate/	0
130	Karnofsky Performance Status/	0
131	Life Tables/	0
132	Likelihood Functions/	0
133	Linear Models/	0
134	Logistic Models/	0
135	Markov Chains/	0
136	Matched-Pair Analysis/	0
137	Medical Futility/	0
138	Models, Statistical/	0
139	Monte Carlo Method/	0
140	Nomograms/	0
141	Odds Ratio/	0
142	Organ Dysfunction Scores/	0
143	Patient Acuity/	0
144	Position-Specific Scoring Matrices/	0
145	Pregnancy Outcome/	0
146	Principal Component Analysis/	0
147	Probability/	0
148	Program Evaluation/	0
149	Progression-Free Survival/	0

150	Propensity Score/	0
151	Proportional Hazards Models/	0
152	Protective Factors/	0
153	Quality-Adjusted Life Years/	0
154	Regression Analysis/	0
155	Reproducibility of Results/	0
156	Risk Assessment/	0
157	Risk Factors/	0
158	Risk/	0
159	Roc Curve/	0
160	Sickness Impact Profile/	0
161	Signal-To-Noise Ratio/	0
162	Simplified Acute Physiology Score/	0
163	Survival Analysis/	0
164	Survival Rate/	0
165	Survival/	0
166	Uncertainty/	0
167	Validation Studies As Topic/	0
168	Validation Studies/	0
169	"near miss??" .mp.	303
170	"acute physiology and chronic health evaluat*" .mp.	571
171	(adverse outcome? adj (index?? or indices)).mp.	4
172	(bivariat* adj3 Gompertz*) .mp.	0

173	(critical adj2 (path or paths or pathway or pathways)).mp.	714
174	(decision adj2 tree?).mp.	1448
175	(decision? adj2 aid?).mp.	883
176	(decision? adj2 analy*).mp.	1444
177	(decision? adj2 model*).mp.	1364
178	(decision? adj2 techni*).mp.	229
179	(logistic* adj2 model*).mp.	9769
180	(logistic* adj2 regression*).mp.	38115
181	(multivariab* adj3 Gompertz*).mp.	0
182	(prediction adj1 (model or tool or rule)).mp.	2833
183	(predictive adj1 (value of tests or model)).mp.	1940
184	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	2913
185	(prognostic* adj2 strateg*).mp.	37
186	receiver operating characteristic?.mp.	10334
187	(regression adj analy*).mp.	34092
188	(risk adj1 calculat*).mp.	615
189	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	14794
190	(roc adj2 curve?).mp.	5550
191	(validation or discrimination or calibration).mp.	60101
192	algorhythm*.mp.	8
193	algorism*.mp.	15
194	algorithm*.mp.	59746

195	APACHE.mp.	1124
196	Bayesian.mp.	8825
197	bench mark*.mp.	59
198	benchmark*.mp.	10929
199	"c-index?".mp.	701
200	"c-statistic?".mp.	953
201	Charlson.mp.	1518
202	(comorbid* adj2 (index* or indices)).mp.	1492
203	(co-morbid* adj2 (index* or indices)).mp.	70
204	"concordance statistic?".mp.	26
205	(Cox adj2 model*).mp.	3317
206	decision tree?.mp.	1427
207	Elixhauser.mp.	112
208	flow chart?.mp.	164
209	flowchart?.mp.	201
210	"goodness of fit".mp.	1247
211	hazard* model*.mp.	5023
212	hazard* ratio?.mp.	16442
213	"HL test*3".mp.	15
214	"Hosmer-Lemeshow*".mp.	290
215	Kaplan Meier*.mp.	9675
216	log-rank test???.mp.	2953
217	median survival time?.mp.	1098

218	MODS.mp.	249
219	mortality index?? .mp.	43
220	mortality indices.mp.	7
221	MPM.mp.	492
222	predict* .mp.	242748
223	prognostic model* .mp.	707
224	propensity scor*3.mp.	4784
225	random-effect* model* .mp.	4365
226	risk ratio? .mp.	2998
227	SAPS.mp.	445
228	SOFA.mp.	864
229	or/100-228 [Prediction Models & related terms]	429221
230	99 and 229 [Emergence Delirium + Children + Prediction]	20

Embase

Embase Classic+Embase 1947 to 2019 May 16

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	229
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	10253
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	18780

4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	2058
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	4557
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	31871
7	anxiety/ and exp surgery/	21749
8	(emergence adj10 agitat*).mp.	688
9	(post?an?esthetic adj3 agitat*).mp.	13
10	(recovery adj10 agitat*).mp.	458
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	12784
12	(agitat* adj8 emergence).mp.	677
13	(emergence adj8 excitement?).mp.	33
14	(postan?esthe* adj8 excitement?).mp.	16
15	(post-an?esthe* adj8 excitement?).mp.	2
16	(postop* adj3 agitat*).mp.	272
17	(post-op* adj3 agitat*).mp.	35
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	18
21	(post-anesth* adj3 agitat*).mp.	7
22	(postanaesth* adj3 agitat*).mp.	6

23	(post-anaesth* adj3 agitat*).mp.	5
24	emergence agitation/ [New Emtree as of 2017]	289
25	delirium/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	10064
26	cognition/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	18718
27	"confusion (uncertainty)"/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	135
28	mental stress/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	5356
29	or/1-28 [Emergence Delirium or Emergence Agitation & related terms]	69313
30	exp Infant/	1105534
31	exp Child/	2856864
32	exp Adolescent/	1568900
33	Child, Preschool/	403434
34	Adolescent Health Services/	37106
35	Adolescent Health/	7720
36	Adolescent Medicine/	50625
37	Adolescent, Hospitalized/	496
38	Adolescent, Institutionalized/	16
39	Child, Hospitalized/	3495
40	Child, Institutionalized/	108
41	exp Child Care/	52302
42	exp Child Health Services/	92958
43	exp Child Welfare/	17616

44	exp Infant Welfare/	1938
45	exp Maternal Health Services/	1156
46	exp Maternal Welfare/	13912
47	exp Maternal-Child Health Centers/	807
48	exp Maternal-Child Nursing/	807
49	exp Pediatrics/	111529
50	Neonatology/	4244
51	Perinatology/	2296
52	Schools, Nursery/	1625
53	"early intervention (education)"/	2627
54	(boy or boys).tw.	199903
55	(girl or girls).tw.	204787
56	(gradeschool* or grade school*).mp.	930
57	(highschool* or high school*).mp.	46748
58	(kid or kids).tw.	10148
59	(minor or minors).tw.	287339
60	(youth?? or youths?).mp.	84318
61	adolescen*.tw,hw,kw.	1664021
62	babies.jw.	0
63	babies.mp.	55799
64	baby*.jw.	1
65	baby*.mp.	76129
66	child*.tw,kw,hw.	2817243

67	elementary school*.mp.	11770
68	infanc*.jw.	1356
69	infanc*.mp.	81398
70	infant*.jw.	10854
71	infant*.mp.	959146
72	junior high*.mp.	3196
73	juvenile?.tw.	99427
74	kindergarten*.mp.	7885
75	middle school*.mp.	6553
76	neonat*.jw.	37101
77	neonat*.mp.	357757
78	neo-nat*.mp.	1363
79	newborn*.jw.	62
80	newborn*.mp.	717579
81	new-born*.mp.	8016
82	nursery school*.mp.	2403
83	paediatr*.jw.	90987
84	paediatr*.mp.	108223
85	pediatr*.jw.	617326
86	pediatr*.mp.	519514
87	perinatal*.mp.	138343
88	peri-natal*.mp.	411
89	preadoles*.mp.	3729

90	pre-adoles*.mp.	1562
91	premie.mp.	45
92	premies.mp.	45
93	premmie?.mp.	3
94	preschool*.mp.	604001
95	pre-school*.mp.	7188
96	schoolage*.mp.	415
97	schoolchild*.mp.	17506
98	senior high*.mp.	1371
99	stepchild*.mp.	320
100	teen*.tw.	39385
101	toddler?.mp.	13100
102	weanling?.mp.	9215
103	exp juvenile/	3706931
104	exp adolescence/	83296
105	exp childhood/	104550
106	exp newborn period/	12501
107	youth??.mp.	84318
108	exp perinatal period/	32847
109	adolescent health/	7720
110	child care/ or child death/ or exp child health/ or exp child health care/ or exp child health insurance/ or exp child hospitalization/ or exp child safety/ or exp child urology/ or childhood mortality/	167809
111	pediatric advanced life support/ or exp pediatric anesthesia/ or exp pediatric cardiology/ or exp pediatric emergency medicine/ or exp pediatric hospital/ or exp pediatric intensive care nursing/	199673

	or exp pediatric intensive care unit/ or exp pediatric nurse/ or exp pediatric nurse practitioner/ or exp pediatric nursing/ or exp pediatric surgeon/ or exp pediatric surgery/ or exp pediatric ward/ or exp pediatrician/ or exp pediatrics/	
112	or/30-111 [Children & related terms]	5128122
113	29 and 112 [Emergence Delirium + Children]	13286
114	"decision tree"/	11002
115	"failure to rescue (health care)"/	111
116	algorithm/	243018
117	clinical pathway/	8042
118	disease activity score/	4727
119	evaluation study/	38864
120	exp area under the curve/	129047
121	exp decision support system/	22536
122	exp disease severity assessment/	24748
123	exp multivariate analysis/	394502
124	exp multivariate analysis/	394502
125	exp prediction/ and forecasting/	1073
126	exp program evaluation/	20499
127	exp risk/	2313535
128	exp statistical analysis/	2159143
129	exp statistical concepts/	3427977
130	exp statistical model/	154617
131	exp statistical parameters/	1431106
132	exp survival/	1045554

133	health status indicator/	2669
134	life table/	4734
135	markov chain/	3896
136	nomogram/	9110
137	position weight matrix/	623
138	prognosis/ or prognostic assessment/	595295
139	protection/	66264
140	quality adjusted life year/	23570
141	reproducibility/	205185
142	signal noise ratio/	42008
143	treatment outcome/	809840
144	validation study/	76652
145	algorhythm*.mp.	290
146	algorism*.mp.	214
147	algorithm*.mp.	380325
148	APACHE.mp.	20979
149	Bayesian.mp.	48148
150	benchmark*.mp.	42812
151	benchmark*.mp.	42812
152	calibrat*.mp.	142637
153	Charlson.mp.	22537
154	decision tree?.mp.	15356
155	discrimination.mp.	181296

156	Elixhauser.mp.	1278
157	flow chart?.mp.	2334
158	flowchart?.mp.	1755
159	forecast*.mp.	77610
160	hazard* model*.mp.	118483
161	hazard* ratio?.mp.	150827
162	Kaplan Meier*.mp.	125741
163	likelihood*.mp.	176152
164	log-rank test???.mp.	43642
165	median survival time?.mp.	25312
166	MODS.mp.	2911
167	mortality index???.mp.	558
168	mortality indices.mp.	174
169	MPM.mp.	4913
170	predict*.mp.	2016097
171	prognostic model*.mp.	6479
172	propensitys cor*3.mp.	1
173	QALY.mp.	14683
174	Quality-Adjusted Life Year?.mp.	26386
175	random-effect* model*.mp.	29966
176	receiver operating characteristic?.mp.	130718
177	risk???.mp.	3614808
178	SAPS.mp.	5567

179	validation.mp.	369204
180	"near miss??".mp.	3273
181	"acute physiology and chronic health evaluat*".mp.	5727
182	(bivariat* adj3 Gompertz*).mp.	1
183	(clinical adj2 (path or paths or pathway?)).mp.	13130
184	(comorbid* adj2 (index* or indices)).mp.	22928
185	(co-morbid* adj2 (index* or indices)).mp.	1394
186	(Cox adj2 model*).mp.	39059
187	(critical adj2 (path or paths or pathway?)).mp.	7646
188	(decision adj2 tree?).mp.	15523
189	(decision? adj2 aid?).mp.	7080
190	(decision? adj2 analy*).mp.	15181
191	(decision? adj2 model*).mp.	12980
192	(decision? adj2 techni*).mp.	1604
193	(discriminan* adj2 analy*).mp.	30825
194	(evaluat* adj4 (study or studies)).mp.	787636
195	(logistic* adj2 model*).mp.	92618
196	(logistic* adj2 regression*).mp.	378496
197	(multivariab* adj3 Gompertz*).mp.	2
198	(prediction adj2 (model* or tool* or rule?)).mp.	34208
199	(predictive adj1 (model* or tool* or rule?)).mp.	27823
200	(prognostic* adj2 strateg*).mp.	344
201	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	33634

202	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	32523
203	(regression adj analy*).mp.	553975
204	(reproduc* adj2 result*).mp.	16225
205	(risk adj1 calculat*).mp.	5860
206	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	578521
207	(roc adj2 curve?).mp.	60049
208	(survival adj2 (analy* or rate or rates)).mp.	394296
209	(validat* adj4 (study or studies)).mp.	131083
210	"Healthcare Failure Mode and Effect Analysis"/	93
211	"Outcome Assessment (Health Care)"/	313115
212	"Predictive Value of Tests"/	76279
213	"Severity of Illness Index"/	14021
214	"Sensitivity and Specificity"/	324709
215	Actuarial Analysis/	254242
216	Adverse Outcome Pathways/	221
217	Algorithms/	166389
218	Apache/	16033
219	Area Under Curve/	118014
220	Bayes Theorem/	31570
221	Behavioral Risk Factor Surveillance System/	2845
222	Biostatistics/	4567
223	Calibration/	64546

224	Cluster Analysis/	52844
225	Critical Pathways/	8042
226	Data Interpretation, Statistical/	228758
227	Decision Support Techniques/	17149
228	Decision Theory/	1731
229	Discriminant Analysis/	17694
230	Disease-Free Survival/	74162
231	Evaluation Studies as Topic/	23003
232	Evaluation Studies/	38864
233	exp Benchmarking/	3364
234	exp Decision Trees/	11002
235	exp Health Status Indicators/	24514
236	Factor Analysis, Statistical/	5090
237	Failure to Rescue, Health Care/	111
238	Forecasting/	44635
239	Kaplan-Meier Estimate/	53369
240	Karnofsky Performance Status/	9614
241	Life Tables/	4734
242	Likelihood Functions/	154580
243	Linear Models/	124533
244	Logistic Models/	134984
245	Markov Chains/	3830
246	Matched-Pair Analysis/	133427

247	Medical Futility/	770653
248	Models, Statistical/	134976
249	Monte Carlo Method/	36044
250	Nomograms/	9110
251	Odds Ratio/	14944
252	Organ Dysfunction Scores/	662
253	Patient Acuity/	755
254	Position-Specific Scoring Matrices/	623
255	Pregnancy Outcome/	53652
256	Principal Component Analysis/	40137
257	Probability/	94110
258	Program Evaluation/	12622
259	Progression-Free Survival/	92330
260	Propensity Score/	22146
261	Proportional Hazards Models/	67956
262	Protective Factors/	55952
263	Quality-Adjusted Life Years/	23570
264	Regression Analysis/	127859
265	Reproducibility of Results/	156061
266	Roc Curve/	40138
267	Sickness Impact Profile/	2265
268	Signal-To-Noise Ratio/	35474
269	Simplified Acute Physiology Score/	2425

270	Survival Analysis/	14811
271	Survival Rate/	233761
272	Survival/	318877
273	Uncertainty/	22438
274	Validation Studies As Topic/	76652
275	Validation Studies/	76652
276	or/114-275 [Prediction Tools & related terms]	9973408
277	113 and 276 [Emergence Delirium + Children + Prediction]	6824
278	(exp animals/ or exp animal experimentation/ or nonhuman/) not ((exp animals/ or exp animal experimentation/ or nonhuman/) and exp human/)	6981392
279	277 not 278	6555
280	limit 277 to human	6264
281	limit 280 to (adult <18 to 64 years> or aged <65+ years>)	2204
282	280 not 281	4060
283	limit 280 to (embryo <first trimester> or infant <to one year> or child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>)	3813
284	282 or 283	5501
285	remove duplicates from 284	5447

CCTR

Cochrane Central Register of Controlled Trials 2014 to Present

#	Searches	Results
1	Emergence Delirium/ [New MeSH as of January 2017]	50
2	Delirium/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	269
3	Cognition/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	542
4	Psychomotor Agitation/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	217
5	Stress, Psychological/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	478
6	Anxiety/ and (exp "Anesthesia and Analgesia"/ or exp Anesthetics/ or exp Postoperative Period/ or exp Postoperative Care/ or exp Postoperative Complications/ or exp Surgical Procedures, Operative/ or su.fs.)	1597
7	anxiety/ and exp surgery/	5
8	(emergence adj10 agitat*).mp.	573
9	(post?an?esthetic adj3 agitat*).mp.	10
10	(recovery adj10 agitat*).mp.	316
11	deliri*.mp. and ((anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?).mp. or su.fs. or exp surgical procedures, operative/)	1585
12	(agitat* adj8 emergence).mp.	567
13	(emergence adj8 excitement?).mp.	8
14	(postan?esthe* adj8 excitement?).mp.	3
15	(post-an?esthe* adj8 excitement?).mp.	2
16	(postop* adj3 agitat*).mp.	249

17	(post-op* adj3 agitat*).mp.	32
18	(postsurg* adj3 agitat*).mp.	0
19	(post-surg* adj3 agitat*).mp.	0
20	(postanesth* adj3 agitat*).mp.	15
21	(post-anesth* adj3 agitat*).mp.	9
22	(postanaesth* adj3 agitat*).mp.	8
23	(post-anaesth* adj3 agitat*).mp.	4
24	emergence agitation/ [New Emtree as of 2017]	0
25	delirium/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	183
26	cognition/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	365
27	"confusion (uncertainty)"/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	0
28	mental stress/ and (exp anesthesiological procedure/ or exp anesthesiologist/ or exp anesthesiology/ or exp anesthetic agent/ or exp surgery/ or su.fs.)	0
29	or/1-28 [Emergence Delirium or Emergence Agitation & related terms]	4712
30	exp Infant/	29615
31	exp Child/	52233
32	exp Adolescent/	99154
33	Child, Preschool/	27800
34	Adolescent Health Services/	166
35	Adolescent Health/	19
36	Adolescent Medicine/	4
37	Adolescent, Hospitalized/	6

38	Adolescent, Institutionalized/	1
39	Child, Hospitalized/	111
40	Child, Institutionalized/	62
41	exp Child Care/	1028
42	exp Child Health Services/	789
43	exp Child Welfare/	971
44	exp Infant Welfare/	77
45	exp Maternal Health Services/	1892
46	exp Maternal Welfare/	106
47	exp Maternal-Child Health Centers/	43
48	exp Maternal-Child Nursing/	178
49	exp Pediatrics/	624
50	Neonatology/	28
51	Perinatology/	12
52	Schools, Nursery/	36
53	"early intervention (education)"/	442
54	(boy or boys).tw.	6155
55	(girl or girls).tw.	6559
56	(gradeschool* or grade school*).mp.	110
57	(highschool* or high school*).mp.	3190
58	(kid or kids).tw.	827
59	(minor or minors).tw.	15112
60	(youth?? or youths?).mp.	6015

61	adolescen*.tw,hw,kw.	129131
62	babies.jw.	0
63	babies.mp.	3782
64	baby*.jw.	1
65	baby*.mp.	3881
66	child*.tw,kw,hw.	140574
67	elementary school*.mp.	1346
68	infanc*.jw.	30
69	infanc*.mp.	2257
70	infant*.jw.	221
71	infant*.mp.	55953
72	junior high*.mp.	273
73	juvenile?.tw.	1873
74	kindergarten*.mp.	587
75	middle school*.mp.	854
76	neonat*.jw.	1417
77	neonat*.mp.	19734
78	neo-nat*.mp.	6
79	newborn*.jw.	3
80	newborn*.mp.	25157
81	new-born*.mp.	216
82	nursery school*.mp.	78
83	paediatr*.jw.	3613

84	paediatr*.mp.	6530
85	pediatr*.jw.	23996
86	pediatr*.mp.	26389
87	perinatal*.mp.	5096
88	peri-natal*.mp.	8
89	preadoles*.mp.	299
90	pre-adoles*.mp.	110
91	premie.mp.	1
92	premies.mp.	9
93	premmie?.mp.	1
94	preschool*.mp.	36194
95	pre-school*.mp.	590
96	schoolage*.mp.	18
97	schoolchild*.mp.	1289
98	senior high*.mp.	70
99	stepchild*.mp.	4
100	teen*.tw.	2239
101	toddler?.mp.	1435
102	weanling?.mp.	17
103	exp juvenile/	0
104	exp adolescence/	99154
105	exp childhood/	0
106	exp newborn period/	0

107	youth??.mp.	6015
108	exp perinatal period/	0
109	adolescent health/	19
110	child care/ or child death/ or exp child health/ or exp child health care/ or exp child health insurance/ or exp child hospitalization/ or exp child safety/ or exp child urology/ or childhood mortality/	1020
111	pediatric advanced life support/ or exp pediatric anesthesia/ or exp pediatric cardiology/ or exp pediatric emergency medicine/ or exp pediatric hospital/ or exp pediatric intensive care nursing/ or exp pediatric intensive care unit/ or exp pediatric nurse/ or exp pediatric nurse practitioner/ or exp pediatric nursing/ or exp pediatric surgeon/ or exp pediatric surgery/ or exp pediatric ward/ or exp pediatrician/ or exp pediatrics/	1872
112	or/30-111 [Children & related terms]	286839
113	29 and 112 [Emergence Delirium + Children]	1590
114	"decision tree"/	157
115	"failure to rescue (health care)"/	0
116	algorithm/	3354
117	clinical pathway/	177
118	disease activity score/	0
119	evaluation study/	0
120	exp area under the curve/	0
121	exp decision support system/	0
122	exp disease severity assessment/	0
123	exp multivariate analysis/	5411
124	exp multivariate analysis/	5411
125	exp prediction/ and forecasting/	0
126	exp program evaluation/	5654

127	exp risk/	35908
128	exp statistical analysis/	0
129	exp statistical concepts/	0
130	exp statistical model/	15045
131	exp statistical parameters/	0
132	exp survival/	130
133	health status indicator/	972
134	life table/	544
135	markov chain/	256
136	nomogram/	65
137	position weight matrix/	1
138	prognosis/ or prognostic assessment/	13055
139	protection/	0
140	quality adjusted life year/	1106
141	reproducibility/	0
142	signal noise ratio/	0
143	treatment outcome/	122989
144	validation study/	0
145	algorhythm*.mp.	6
146	algorism*.mp.	15
147	algorithm*.mp.	12241
148	APACHE.mp.	2237
149	Bayesian.mp.	1868

150	benchmark*.mp.	1153
151	benchmark*.mp.	1153
152	calibrat*.mp.	3762
153	Charlson.mp.	838
154	decision tree?.mp.	592
155	discrimination.mp.	5037
156	Elixhauser.mp.	25
157	flow chart?.mp.	145
158	flowchart?.mp.	106
159	forecast*.mp.	1006
160	hazard* model*.mp.	11510
161	hazard* ratio?.mp.	20715
162	Kaplan Meier*.mp.	12326
163	likelihood*.mp.	9477
164	log-rank test???.mp.	4667
165	median survival time?.mp.	2244
166	MODS.mp.	253
167	mortality index???.mp.	30
168	mortality indices.mp.	6
169	MPM.mp.	248
170	predict*.mp.	92698
171	prognostic model*.mp.	384
172	propensitys cor*3.mp.	0

173	QALY.mp.	2527
174	Quality-Adjusted Life Year?.mp.	4247
175	random-effect* model*.mp.	2235
176	receiver operating characteristic?.mp.	4729
177	risk???.mp.	216058
178	SAPS.mp.	455
179	validation.mp.	12212
180	"near miss??.mp.	66
181	"acute physiology and chronic health evaluat*".mp.	794
182	(bivariat* adj3 Gompertz*).mp.	0
183	(clinical adj2 (path or paths or pathway?)).mp.	744
184	(comorbid* adj2 (index* or indices)).mp.	946
185	(co-morbid* adj2 (index* or indices)).mp.	70
186	(Cox adj2 model*).mp.	3273
187	(critical adj2 (path or paths or pathway?)).mp.	303
188	(decision adj2 tree?).mp.	601
189	(decision? adj2 aid?).mp.	1402
190	(decision? adj2 analy*).mp.	1378
191	(decision? adj2 model*).mp.	977
192	(decision? adj2 techni*).mp.	797
193	(discriminan* adj2 analy*).mp.	747
194	(evaluat* adj4 (study or studies)).mp.	133458
195	(logistic* adj2 model*).mp.	9872

196	(logistic* adj2 regression*).mp.	18835
197	(multivariab* adj3 Gompertz*).mp.	0
198	(prediction adj2 (model* or tool* or rule?)).mp.	1871
199	(predictive adj1 (model* or tool* or rule?)).mp.	1101
200	(prognostic* adj2 strateg*).mp.	32
201	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	2414
202	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	2205
203	(regression adj analy*).mp.	29529
204	(reproduc* adj2 result*).mp.	11890
205	(risk adj1 calculat*).mp.	541
206	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	27417
207	(roc adj2 curve?).mp.	2866
208	(survival adj2 (analy* or rate or rates)).mp.	37889
209	(validat* adj4 (study or studies)).mp.	6740
210	"Healthcare Failure Mode and Effect Analysis"/	0
211	"Outcome Assessment (Health Care)"/	6625
212	"Predictive Value of Tests"/	6985
213	"Severity of Illness Index"/	18300
214	"Sensitivity and Specificity"/	9150
215	Actuarial Analysis/	345
216	Adverse Outcome Pathways/	0
217	Algorithms/	3354

218	Apache/	531
219	Area Under Curve/	6576
220	Bayes Theorem/	363
221	Behavioral Risk Factor Surveillance System/	6
222	Biostatistics/	4
223	Calibration/	340
224	Cluster Analysis/	2257
225	Critical Pathways/	177
226	Data Interpretation, Statistical/	1652
227	Decision Support Techniques/	730
228	Decision Theory/	6
229	Discriminant Analysis/	190
230	Disease-Free Survival/	6480
231	Evaluation Studies as Topic/	3697
232	Evaluation Studies/	1
233	exp Benchmarking/	96
234	exp Decision Trees/	157
235	exp Health Status Indicators/	20399
236	Factor Analysis, Statistical/	622
237	Failure to Rescue, Health Care/	0
238	Forecasting/	513
239	Kaplan-Meier Estimate/	4681
240	Karnofsky Performance Status/	206

241	Life Tables/	544
242	Likelihood Functions/	324
243	Linear Models/	4172
244	Logistic Models/	5003
245	Markov Chains/	256
246	Matched-Pair Analysis/	568
247	Medical Futility/	30
248	Models, Statistical/	1133
249	Monte Carlo Method/	181
250	Nomograms/	65
251	Odds Ratio/	2900
252	Organ Dysfunction Scores/	53
253	Patient Acuity/	59
254	Position-Specific Scoring Matrices/	1
255	Pregnancy Outcome/	2757
256	Principal Component Analysis/	214
257	Probability/	3092
258	Program Evaluation/	5570
259	Progression-Free Survival/	65
260	Propensity Score/	177
261	Proportional Hazards Models/	4807
262	Protective Factors/	83
263	Quality-Adjusted Life Years/	1106

264	Regression Analysis/	5447
265	Reproducibility of Results/	11366
266	Roc Curve/	1200
267	Sickness Impact Profile/	526
268	Signal-To-Noise Ratio/	101
269	Simplified Acute Physiology Score/	2
270	Survival Analysis/	7905
271	Survival Rate/	9640
272	Survival/	130
273	Uncertainty/	135
274	Validation Studies As Topic/	27
275	Validation Studies/	0
276	or/114-275 [Prediction Tools & related terms]	566941
277	113 and 276 [Emergence Delirium + Children + Prediction]	516
278	limit 277 to medline records	427
279	limit 277 to embase records	66
280	278 or 279	493
281	277 not 280	23
282	remove duplicates from 281	23

CDSR

Cochrane Database of Systematic Reviews 2005 to Present

#	Searches	Results
1	(emergence adj8 delirium).mp.	7
2	(emergence adj10 agitat*).mp.	4
3	(post?an?esthetic adj3 agitat*).mp.	2
4	(recovery adj10 agitat*).mp.	7
5	(agitat* adj8 emergence).mp.	4
6	(emergence adj8 excitement?).mp.	2
7	(postan?esthe* adj8 excitement?).mp.	0
8	(post-an?esthe* adj8 excitement?).mp.	0
9	(postop* adj3 agitat*).mp.	4
10	(post-op* adj3 agitat*).mp.	0
11	(postsurg* adj3 agitat*).mp.	0
12	(post-surg* adj3 agitat*).mp.	0
13	(postanesth* adj3 agitat*).mp.	1
14	(post-anesth* adj3 agitat*).mp.	0
15	(postanaesth* adj3 agitat*).mp.	3
16	(post-anaesth* adj3 agitat*).mp.	0
17	or/1-16 [Emergence Delirium & related terms]	15
18	(boy or boys).tw.	427
19	(girl or girls).tw.	432
20	(gradeschool* or grade school*).mp.	5
21	(highschool* or high school*).mp.	166
22	(kid or kids).tw.	107

23	(minor or minors).tw.	2134
24	(youth?? or youths?).mp.	294
25	babies.jw.	0
26	babies.mp.	1086
27	baby*.jw.	0
28	baby*.mp.	1084
29	elementary school*.mp.	70
30	infanc*.jw.	0
31	infanc*.mp.	336
32	infant*.jw.	0
33	infant*.mp.	2068
34	junior high*.mp.	13
35	juvenile?.tw.	209
36	kindergarten*.mp.	82
37	middle school*.mp.	32
38	neonat*.jw.	0
39	neonat*.mp.	1567
40	neo-nat*.mp.	38
41	newborn*.jw.	0
42	newborn*.mp.	1225
43	new-born*.mp.	90
44	nursery school*.mp.	53
45	paediatr*.jw.	0

46	paediatr*.mp.	1599
47	pediatr*.jw.	0
48	pediatr*.mp.	1091
49	perinatal*.mp.	903
50	peri-natal*.mp.	10
51	preadoles*.mp.	22
52	pre-adoles*.mp.	18
53	premie.mp.	14
54	premies.mp.	19
55	premmie?.mp.	0
56	preschool*.mp.	585
57	pre-school*.mp.	200
58	schoolage*.mp.	37
59	schoolchild*.mp.	122
60	senior high*.mp.	3
61	stepchild*.mp.	1
62	teen*.tw.	412
63	toddler?.mp.	254
64	weanling?.mp.	1
65	youth??.mp.	294
66	or/18-65 [Children]	5260
67	17 and 66 [Emergence Delirium + Children]	13
68	algorhythm*.mp.	0

69	algorism*.mp.	0
70	algorithm*.mp.	604
71	APACHE.mp.	61
72	Bayesian.mp.	133
73	benchmark*.mp.	115
74	benchmark*.mp.	115
75	calibrat*.mp.	120
76	Charlson.mp.	18
77	decision tree?.mp.	36
78	discrimination.mp.	189
79	Elixhauser.mp.	3
80	flow chart?.mp.	892
81	flowchart?.mp.	301
82	forecast*.mp.	28
83	hazard* model*.mp.	57
84	hazard* ratio?.mp.	1362
85	Kaplan Meier*.mp.	334
86	likelihood*.mp.	2379
87	log-rank test???.mp.	113
88	median survival time?.mp.	85
89	MODS.mp.	10
90	mortality index???.mp.	1
91	mortality indices.mp.	0

92	MPM.mp.	8
93	predict*.mp.	3262
94	prognostic model*.mp.	11
95	propensitys cor*3.mp.	0
96	QALY.mp.	110
97	Quality-Adjusted Life Year?.mp.	181
98	random-effect* model*.mp.	6247
99	receiver operating characteristic?.mp.	179
100	risk???.mp.	9478
101	SAPS.mp.	76
102	validation.mp.	526
103	"near miss??.mp.	17
104	"acute physiology and chronic health evaluat*".mp.	39
105	(bivariat* adj3 Gompertz*).mp.	0
106	(clinical adj2 (path or paths or pathway?)).mp.	224
107	(comorbid* adj2 (index* or indices)).mp.	13
108	(co-morbid* adj2 (index* or indices)).mp.	1
109	(Cox adj2 model*).mp.	74
110	(critical adj2 (path or paths or pathway?)).mp.	23
111	(decision adj2 tree?).mp.	37
112	(decision? adj2 aid?).mp.	139
113	(decision? adj2 analy*).mp.	148
114	(decision? adj2 model*).mp.	50

115	(decision? adj2 techni*).mp.	37
116	(discriminan* adj2 analy*).mp.	5
117	(evaluat* adj4 (study or studies)).mp.	4048
118	(logistic* adj2 model*).mp.	84
119	(logistic* adj2 regression*).mp.	197
120	(multivariab* adj3 Gompertz*).mp.	0
121	(prediction adj2 (model* or tool* or rule?)).mp.	63
122	(predictive adj1 (model* or tool* or rule?)).mp.	22
123	(prognostic* adj2 strateg*).mp.	0
124	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	56
125	(propensit* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	43
126	(regression adj analy*).mp.	567
127	(reproduc* adj2 result*).mp.	60
128	(risk adj1 calculat*).mp.	795
129	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	3906
130	(roc adj2 curve?).mp.	102
131	(survival adj2 (analy* or rate or rates)).mp.	903
132	(validat* adj4 (study or studies)).mp.	551
133	or/68-132 [Prediction Tools & related terms]	9507
134	67 and 133 [Emergence Delirium + Children + Prediction]	13
135	(child* or adolescen* or teen or teens or teenage? or infant? or baby or babies or newborn? or neonat* or p?ediatr*).ti,gw.	2991
136	134 and 135	8

137	limit 136 to full systematic reviews	8
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PsycINFO

PsycINFO 1806 to May Week 2 2019

1	(emergence adj2 delirium).mp.	19
2	agitation/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	9
3	anxiety/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	1278
4	cognition/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	288
5	delirium/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	323
6	psychological stress/ and (exp surgery/ or postsurgical complications/ or surgical patients/)	161
7	(emergence adj10 agitat*).mp.	28
8	(post?an?esthetic adj3 agitat*).mp.	0
9	(recovery adj10 agitat*).mp.	32
10	(deliri* and (anesth* or anaesth* or postop* or post-op or postan?esth* or post-an?esth* or surgery or surgeries or surgical or operation?)).mp.	874
11	(agitat* adj8 emergence).mp.	26
12	(emergence adj8 excitement?).mp.	7
13	(postan?esthe* adj8 excitement?).mp.	0
14	(post-an?esthe* adj8 excitement?).mp.	0
15	(postop* adj3 agitat*).mp.	5
16	(post-op* adj3 agitat*).mp.	1
17	(postsurg* adj3 agitat*).mp.	0

18	(post-surg* adj3 agitat*).mp.	0
19	(postanesth* adj3 agitat*).mp.	0
20	(post-anesth* adj3 agitat*).mp.	0
21	(postanaesth* adj3 agitat*).mp.	0
22	(post-anaesth* adj3 agitat*).mp.	0
23	or/1-22 [Emergence Delirium & related terms]	2655
24	Adolescent Health/	1242
25	Adolescent Medicine/	0
26	exp Child Care/	9467
27	exp Child Welfare/	8581
28	exp Pediatrics/	27229
29	"early intervention (education)"/	0
30	(boy or boys).tw.	70760
31	(girl or girls).tw.	69781
32	(gradeschool* or grade school*).mp.	1362
33	(highschool* or high school*).mp.	93026
34	(kid or kids).tw.	4237
35	(minor or minors).tw.	24271
36	(youth?? or youths?).mp.	98276
37	babies.jw.	1
38	babies.mp.	6142
39	baby*.jw.	0
40	baby*.mp.	12771

41	elementary school*.mp.	66653
42	infanc*.jw.	1740
43	infanc*.mp.	19067
44	infant*.jw.	7350
45	infant*.mp.	91129
46	junior high*.mp.	16881
47	juvenile?.tw.	26540
48	kindergarten*.mp.	19118
49	middle school*.mp.	19911
50	neonat*.jw.	1035
51	neonat*.mp.	20799
52	neo-nat*.mp.	63
53	newborn*.jw.	665
54	newborn*.mp.	11030
55	new-born*.mp.	393
56	nursery school*.mp.	2974
57	paediatr*.jw.	2551
58	paediatr*.mp.	4870
59	pediatr*.jw.	15119
60	pediatr*.mp.	42956
61	perinatal*.mp.	10785
62	peri-natal*.mp.	68
63	preadoles*.mp.	3889

64	pre-adoles*.mp.	1248
65	premie.mp.	4
66	premies.mp.	4
67	premmie?.mp.	0
68	preschool*.mp.	48874
69	pre-school*.mp.	3587
70	schoolage*.mp.	801
71	schoolchild*.mp.	3693
72	senior high*.mp.	2498
73	stepchild*.mp.	767
74	teen*.tw.	21904
75	toddler?.mp.	9983
76	weanling?.mp.	624
77	or/24-76 [Children]	620500
78	23 and 77 [Emergence Delirium + Children]	237
79	Algorithms/	17649
80	Bayes Theorem/	5586
81	Cluster Analysis/	3909
82	Decision Theory/	779
83	Factor Analysis, Statistical/	0
84	Failure to Rescue, Health Care/	0
85	Logistic Models/	6102
86	Markov Chains/	1444

87	Pregnancy Outcome/	1008
88	Principal Component Analysis/	647
89	Probability/	5943
90	Program Evaluation/	12230
91	Protective Factors/	4875
92	Regression Analysis/	2894
93	Risk Assessment/	12885
94	Risk Factors/	74196
95	Survival/	767
96	Uncertainty/	7618
97	"near miss??" .mp.	484
98	"acute physiology and chronic health evaluat*" .mp.	165
99	(adverse outcome? adj (index?? or indices)).mp.	2
100	(bivariat* adj3 Gompertz*).mp.	2
101	(critical adj2 (path or paths or pathway or pathways)).mp.	453
102	(decision adj2 tree?).mp.	1626
103	(decision? adj2 aid?).mp.	1664
104	(decision? adj2 analy*).mp.	2950
105	(decision? adj2 model*).mp.	5129
106	(decision? adj2 techni*).mp.	401
107	(logistic* adj2 model*).mp.	13022
108	(logistic* adj2 regression*).mp.	51535
109	(multivariab* adj3 Gompertz*).mp.	0

110	(prediction adj1 (model or tool or rule)).mp.	1596
111	(predictive adj1 (value of tests or model)).mp.	1666
112	(prognostic* adj2 (scor* or index?? or indices or rate? or rating? or model* or tool*)).mp.	811
113	(prognostic* adj2 strateg*).mp.	14
114	receiver operating characteristic?.mp.	4637
115	(regression adj analy*).mp.	75051
116	(risk adj1 calculat*).mp.	286
117	(risk adj1 (adjust* or assess* or scor* or engine? or equation? or algorithm* or table? or function*)).mp.	22285
118	(roc adj2 curve?).mp.	2189
119	(validation or discrimination or calibration).mp.	146816
120	algorhythm*.mp.	5
121	algorism*.mp.	7
122	algorithm*.mp.	33085
123	APACHE.mp.	288
124	Bayesian.mp.	9747
125	bench mark*.mp.	65
126	benchmark*.mp.	8009
127	"c-index??.mp.	112
128	"c-statistic?".mp.	279
129	Charlson.mp.	1582
130	(comorbid* adj2 (index* or indices)).mp.	1640
131	(co-morbid* adj2 (index* or indices)).mp.	80

132	"concordance statistic?".mp.	13
133	(Cox adj2 model*).mp.	1298
134	decision tree?.mp.	1598
135	Elixhauser.mp.	51
136	flow chart?.mp.	355
137	flowchart?.mp.	312
138	"goodness of fit".mp.	4296
139	hazard* model*.mp.	3122
140	hazard* ratio?.mp.	5885
141	"HL test*3".mp.	10
142	"Hosmer-Lemeshow*".mp.	63
143	Kaplan Meier*.mp.	1543
144	log-rank test???.mp.	385
145	median survival time?.mp.	151
146	MODS.mp.	49
147	mortality index???.mp.	14
148	mortality indices.mp.	6
149	MPM.mp.	63
150	predict*.mp.	429515
151	prognostic model*.mp.	203
152	propensity scor*3.mp.	2806
153	random-effect* model*.mp.	2754
154	risk ratio?.mp.	1872

155	SAPS.mp.	536
156	SOFA.mp.	95
157	or/79-156 [Prediction tools & related terms]	776076
158	78 and 157 [Emergence Delirium + Children + Prediction]	47
159	limit 158 to human	46
160	limit 159 to (100 childhood <birth to age 12 yrs> or 120 neonatal <birth to age 1 mo> or 140 infancy <2 to 23 mo> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>)	26
161	remove duplicates from 160	26

Web of Science

EmergDeliriumPredict

Web of Science Core Collection: Citation Indexes

- Science Citation Index Expanded (SCI-EXPANDED) --1900-present
- Social Sciences Citation Index (SSCI) --1900-present
- Arts & Humanities Citation Index (A&HCI) --1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
- Book Citation Index– Science (BKCI-S) --2005-present
- Book Citation Index– Social Sciences & Humanities (BKCI-SSH) --2005-present
- Emerging Sources Citation Index (ESCI) --2005-present

Data last updated: 2019-05-16

# 8	160	#6 NOT #7 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years
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# 7	21,613,191	<p>PMID=((0* or 1* OR 2* OR 3* or 4* or 5* or 6* or 7* or 8* or 9*))</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 6	1,460	<p>#5 AND #4</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 5	3,940,385	<p>TS=(surgical* OR surgery* OR surgeon* OR neurosurgeon* OR surgeries* OR surgical* OR surgeon* OR operati* OR reoperat* OR resect* OR reresect* OR surgical* OR postoperative* OR post-operative* OR postop* OR post-op* OR postprocedur* OR post-procedur* OR post-surg* OR postsurg* OR segmentectom* OR lymphectom* OR necrosectom* OR adenectom* OR adrenalectom* OR appendectom* OR arthrectom* OR cervicectom* OR cholecystectom* OR colectom* OR cystectom* OR dissectom* OR diskectom* OR duodenectom* OR esophagectom* OR pneumonectom* OR fundectom* OR gastrectom* OR glossectom* OR gonadectom* OR hemicolectom* OR hemi-colectom* OR hepatectom* OR hypophysectom* OR iridectom* OR jejunectom* OR laryngectom* OR lobectom* OR lumpectom* OR lymphadenectom* OR lymphadenectom* OR mandibulectom* OR mastectom* OR mastoidectom* OR maxillectom* OR metastasectom* OR myectom* OR myomectom* OR nephrectom* OR oophorectom* OR orchidectom* OR orchiectom* OR pancreatectom* OR pancreaticoduodenectom* OR pancreatico-duodenectom* OR parathyroidectom* OR para-thyroidectom* OR pharyngectom* OR pharyngolaryngoesophagectom* OR pneumonectom* OR postmastect* OR postsurgery* OR proctocolectom* OR prostatect* OR quadrantectom* OR rhinectom* OR salpingectom* OR salpingo-oophorectom* OR splenectom* OR thymectom* OR thyroidectom* OR tonsillectom* OR tumorectom* OR uretecto* OR uvulectom* OR vaginectom* OR vulvectom* OR segmentectom* OR subsegmentectom* OR sub-segmentectom* OR mesohepatectom* OR meso-hepatectom* OR laparotom* OR laparoscop* OR arthroplast* OR hemiarthroplast* OR hemi-arthroplast* OR neurosurg*)</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 4	26,861	<p>#3 AND #2 AND #1</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 3	10,106,633	<p>TS=(("Healthcare Failure Mode and Effect Analysis") OR ("Outcome and Process Assessment (Health Care)") OR ("Predictive Value of Tests") OR ("Severity of Illness Index") OR ("Sensitivity and Specificity") OR ("Actuarial Analysis") OR ("Adverse Outcome Pathways") OR (Algorithms) OR (Apache) OR ("Area Under Curve") OR ("Bayes Theorem") OR ("Behavioral Risk Factor Surveillance System") OR (Biostatistics) OR (Calibration) OR ("Cluster Analysis") OR ("Critical Pathways") OR ("Data Interpretation, Statistical") OR ("Decision Support Techniques") OR ("Decision Theory") OR ("Discriminant Analysis") OR ("Disease-Free Survival") OR ("Evaluation Studies as Topic") OR ("Evaluation Studies") OR (Benchmarking) OR ("Decision Trees") OR ("Health Status Indicators") OR ("Factor Analysis, Statistical") OR ("Failure to Rescue, Health</p>

		<p>Care") OR (Forecasting) OR ("Kaplan-Meier Estimate") OR ("Karnofsky Performance Status") OR ("Life Tables") OR ("Likelihood Functions") OR ("Linear Models") OR ("Logistic Models") OR ("Markov Chains") OR ("Matched-Pair Analysis") OR ("Medical Futility") OR ("Models, Statistical") OR ("Monte Carlo Method") OR (Nomograms) OR ("Odds Ratio") OR ("Organ Dysfunction Scores") OR ("Patient Acuity") OR ("Position-Specific Scoring Matrices") OR ("Pregnancy Outcome") OR ("Principal Component Analysis") OR (Probability) OR ("Program Evaluation") OR ("Progression-Free Survival") OR ("Propensity Score") OR ("Proportional Hazards Models") OR ("Protective Factors") OR ("Quality-Adjusted Life Years") OR ("Regression Analysis") OR ("Reproducibility of Results") OR ("Risk Assessment") OR ("Risk Factors") OR (Risk) OR ("Roc Curve") OR ("Sickness Impact Profile") OR ("Signal-To-Noise Ratio") OR ("Simplified Acute Physiology Score") OR ("Survival Analysis") OR ("Survival Rate") OR (Survival) OR (Uncertainty) OR ("Validation Studies As Topic") OR ("Validation Studies") OR ("near miss**") OR ("acute physiology and chronic health evaluat**") OR (("adverse outcome* adj" (index** OR indices))) OR ((bivariat* NEAR/3 Gompertz*)) OR ((critical NEAR/2 (path OR paths OR pathway OR pathways))) OR ((decision NEAR/2 tree*)) OR ((decision* NEAR/2 aid*)) OR ((decision* NEAR/2 analy*)) OR ((decision* NEAR/2 model*)) OR ((decision* NEAR/2 techni*)) OR ((logistic* NEAR/2 model*)) OR ((logistic* NEAR/2 regression*)) OR ((multivariab* NEAR/3 Gompertz*)) OR ((prediction NEAR/1 (model OR tool OR rule))) OR ((predictive NEAR/1 ("value of tests" OR model))) OR ((prognostic* NEAR/2 (scor* OR index** OR indices OR rate* OR rating* OR model* OR tool*))) OR ((prognostic* NEAR/2 strateg*)) OR ("receiver operating characteristic**") OR ("regression adj analy**") OR ((risk NEAR/1 calculat*)) OR ((risk NEAR/1 (adjust* OR assess* OR scor* OR engine* OR equation* OR algorithm* OR table* OR function*))) OR ((roc NEAR/2 curve*)) OR ((validation OR discrimination OR calibration)) OR (algorhythm*) OR (algorism*) OR (algorithm*) OR (APACHE) OR (Bayesian) OR ("bench mark**") OR (benchmark*) OR (c-index**) OR (c-statistic*) OR (Charlson) OR ((comorbid* NEAR/2 (index* OR indices))) OR ((co-morbid* NEAR/2 (index* OR indices))) OR ("concordance statistic**") OR ((Cox NEAR/2 model*)) OR ("decision tree**") OR (Elixhauser) OR ("flow chart**") OR (flowchart*) OR ("goodness of fit") OR ("hazard* model**") OR ("hazard* ratio**") OR ("HL test*3") OR (Hosmer-Lemeshow*) OR ("Kaplan Meier**") OR ("log-rank test***") OR ("median survival time**") OR (MODS) OR ("mortality index**") OR ("mortality indices") OR (MPM) OR (predict*) OR ("prognostic model**") OR ("propensity scor*3") OR ("random-effect* model**") OR ("risk ratio**") OR (SAPS) OR (SOFA))</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 2	3,463,068	<p>TS=((Infant) OR (Child) OR (Adolescent) OR ("Child, Preschool") OR ("Adolescent Health Services") OR ("Adolescent Health") OR ("Adolescent Medicine") OR ("Adolescent, Hospitalized") OR ("Adolescent, Institutionalized") OR ("Child, Hospitalized") OR ("Child, Institutionalized") OR ("Child Care") OR ("Child Health Services") OR ("Child Welfare") OR ("Infant Welfare") OR ("Maternal Health Services") OR ("Maternal Welfare") OR ("Maternal-Child Health Centers") OR ("Maternal-Child Nursing") OR (Pediatrics) OR (Neonatology) OR (Perinatology) OR ("Schools, Nursery") OR ("early intervention (education)") OR ((boy OR boys)) OR ((girl OR girls)) OR ((gradeschool* OR "grade school**")) OR ((highschool* OR "high school**")) OR ((kid OR kids)) OR ((minor OR minors)) OR ((youth* OR youths*)) OR (adolescenc*) OR (babies) OR (baby*) OR ((child OR childhood* OR children*)) OR ("elementary school**") OR (infanc*) OR (infant*) OR ("junior high**") OR (juvenile*) OR (kindergarten*) OR ("middle school**") OR (neonat*) OR (neo-</p>

		<p>nat*) OR (newborn*) OR (new-born*) OR ("nursery school*") OR (paediatr*) OR (pediatr*) OR (perinatal*) OR (peri-natal*) OR (preadoles*) OR (pre-adoles*) OR (premie) OR (premies) OR (premmie*) OR (preschool*) OR (pre-school*) OR (schoolage*) OR (schoolchild*) OR ("senior high*") OR (stepchild*) OR (teen*) OR (toddler*) OR (weanling*)</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>
# 1	259,722	<p>TS=(("Emergence Delirium") OR (Delirium AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Cognition AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR ("Psychomotor Agitation" AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR ("Stress, Psychological" AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Anxiety AND ("Anesthesia and Analgesia" OR Anesthetics OR "Postoperative Period" OR "Postoperative Care" OR "Postoperative Complications" OR "Surgical Procedures, Operative" OR su)) OR (Anxiety) OR ((emergence NEAR/10 agitat*)) OR (("post*an*esthetic" NEAR/3 agitat*)) OR ((recovery NEAR/10 agitat*)) OR (deliri* AND ((anesth* OR anaesth* OR postop* OR post-op OR "postan*esth*" OR "post-an*esth*" OR surgery OR surgeries OR surgical OR "operation*" OR su OR "surgical procedures, operative")) OR ((agitat* NEAR/8 emergence)) OR ((emergence NEAR/8 "excitement*")) OR (("postan*esthe*" NEAR/8 "excitement*")) OR (("post-an*esthe*" NEAR/8 "excitement*")) OR ((postop* NEAR/3 agitat*)) OR ((post-op* NEAR/3 agitat*)) OR ((postsurg* NEAR/3 agitat*)) OR ((post-surg* NEAR/3 agitat*)) OR ((postanesth* NEAR/3 agitat*)) OR ((post-anesth* NEAR/3 agitat*)) OR ((postanaesth* NEAR/3 agitat*)) OR ((post-anaesth* NEAR/3 agitat*)))</p> <p>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years</p>

Scopus

Predict Emergence Delirium in Children

248 document results

(((INDEXTERMS ("Emergence Delirium")) OR (INDEXTERMS ("Delirium") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures,

Operative") OR INDEXTERMS ("su")) OR (INDEXTERMS ("Cognition") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su")) OR (INDEXTERMS ("Psychomotor Agitation") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su")) OR (INDEXTERMS ("Stress, Psychological") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su")) OR (INDEXTERMS ("Anxiety") AND (INDEXTERMS ("Anesthesia and Analgesia") OR INDEXTERMS ("Anesthetics") OR INDEXTERMS ("Postoperative Period") OR INDEXTERMS ("Postoperative Care") OR INDEXTERMS ("Postoperative Complications") OR INDEXTERMS ("Surgical Procedures, Operative") OR INDEXTERMS ("su")) OR (INDEXTERMS ("Anxiety")) OR ((TITLE-ABS-KEY ("emergence") W/10 TITLE-ABS-KEY ("agitat*")) OR ((TITLE-ABS-KEY ("post*an*esthetic") W/3 TITLE-ABS-KEY ("agitat*")) OR ((TITLE-ABS-KEY ("recovery") W/10 TITLE-ABS-KEY ("agitat*")) OR (TITLE-ABS-KEY ("deliri*") AND ((TITLE-ABS-KEY ("anesth*") OR TITLE-ABS-KEY ("anaesth*") OR TITLE-ABS-KEY ("postop*") OR TITLE-ABS-KEY ("post-op*") OR TITLE-ABS-KEY ("postan*esth*") OR TITLE-ABS-KEY ("post-an*esth*") OR TITLE-ABS-KEY ("surgery") OR TITLE-ABS-KEY ("surgeries") OR TITLE-ABS-KEY ("surgical") OR TITLE-ABS-KEY ("operation*")) OR INDEXTERMS ("su") OR INDEXTERMS ("surgical procedures, operative"))) OR ((TITLE-ABS-KEY ("agitat*") W/8 TITLE-ABS-KEY ("emergence"))) OR ((TITLE-ABS-KEY ("emergence") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("postan*esthe*") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("post-an*esthe*") W/8 TITLE-ABS-KEY ("excitement*"))) OR ((TITLE-ABS-KEY ("postop*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-op*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postsurg*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-surg*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postanesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-anesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("postanaesth*") W/3 TITLE-ABS-KEY ("agitat*"))) OR ((TITLE-ABS-KEY ("post-anaesth*") W/3 TITLE-ABS-KEY ("agitat*")))) AND ((INDEXTERMS ("Infant")) OR (INDEXTERMS ("Child")) OR (INDEXTERMS ("Adolescent")) OR (INDEXTERMS ("Child, Preschool")) OR (INDEXTERMS ("Adolescent Health Services")) OR (INDEXTERMS ("Adolescent Health")) OR (INDEXTERMS ("Adolescent Medicine")) OR (INDEXTERMS ("Adolescent, Hospitalized")) OR (INDEXTERMS ("Adolescent, Institutionalized")) OR (INDEXTERMS ("Child, Hospitalized")) OR (INDEXTERMS ("Child, Institutionalized")) OR (INDEXTERMS ("Child Care")) OR (INDEXTERMS ("Child Health Services")) OR (INDEXTERMS ("Child Welfare")) OR (INDEXTERMS ("Infant Welfare")) OR (INDEXTERMS ("Maternal Health Services")) OR (INDEXTERMS ("Maternal Welfare")) OR (INDEXTERMS ("Maternal-Child Health Centers")) OR (INDEXTERMS ("Maternal-Child Nursing")) OR (INDEXTERMS ("Pediatrics")) OR (INDEXTERMS ("Neonatology")) OR (INDEXTERMS ("Perinatology")) OR (INDEXTERMS ("Schools, Nursery")) OR (INDEXTERMS ("early intervention (education)")) OR ((TITLE-ABS ("boy") OR TITLE-ABS ("boys"))) OR ((TITLE-ABS ("girl") OR TITLE-ABS ("girls"))) OR ((TITLE-ABS-KEY ("gradeschool*") OR TITLE-ABS-KEY ("grade school*"))) OR ((TITLE-ABS-KEY ("highschool*") OR TITLE-ABS-KEY ("high school*"))) OR ((TITLE-ABS ("kid") OR TITLE-ABS ("kids"))) OR ((TITLE-ABS ("minor") OR TITLE-ABS ("minors"))) OR ((TITLE-ABS-KEY ("youth*") OR TITLE-ABS-KEY ("youths*"))) OR (TITLE-ABS ("adolescenc*")) OR (TITLE-ABS-KEY ("babies")) OR (TITLE-ABS-KEY ("baby*")) OR ((TITLE-ABS ("child") OR TITLE-ABS ("childhood*") OR TITLE-ABS ("children*"))) OR (TITLE-ABS-KEY ("elementary school*")) OR (TITLE-ABS-KEY ("infanc*")) OR (TITLE-ABS-KEY ("infant*")) OR (TITLE-ABS-KEY ("junior high*")) OR (TITLE-

ABS ("juvenile* ") OR (TITLE-ABS-KEY ("kindergarten* ")) OR (TITLE-ABS-KEY ("middle school* ")) OR (TITLE-ABS-KEY ("neonate* ")) OR (TITLE-ABS-KEY ("neo-nat* ")) OR (TITLE-ABS-KEY ("newborn* ")) OR (TITLE-ABS-KEY ("new-born* ")) OR (TITLE-ABS-KEY ("nursery school* ")) OR (TITLE-ABS-KEY ("paediatr* ")) OR (TITLE-ABS-KEY ("pediatr* ")) OR (TITLE-ABS-KEY ("perinatal* ")) OR (TITLE-ABS-KEY ("peri-natal* ")) OR (TITLE-ABS-KEY ("preadoles* ")) OR (TITLE-ABS-KEY ("pre-adoles* ")) OR (TITLE-ABS-KEY ("premie ")) OR (TITLE-ABS-KEY ("premies ")) OR (TITLE-ABS-KEY ("premmie* ")) OR (TITLE-ABS-KEY ("preschool* ")) OR (TITLE-ABS-KEY ("pre-school* ")) OR (TITLE-ABS-KEY ("schoolage* ")) OR (TITLE-ABS-KEY ("schoolchild* ")) OR (TITLE-ABS-KEY ("senior high* ")) OR (TITLE-ABS-KEY ("stepchild* ")) OR (TITLE-ABS ("teen* ")) OR (TITLE-ABS-KEY ("toddler* ")) OR (TITLE-ABS-KEY ("weanling* ")) AND ((INDEXTERMS ("Healthcare Failure Mode and Effect Analysis")) OR (INDEXTERMS ("Outcome and Process Assessment (Health Care)")) OR (INDEXTERMS ("Predictive Value of Tests")) OR (INDEXTERMS ("Severity of Illness Index")) OR (INDEXTERMS ("Sensitivity and Specificity")) OR (INDEXTERMS ("Actuarial Analysis")) OR (INDEXTERMS ("Adverse Outcome Pathways")) OR (INDEXTERMS ("Algorithms")) OR (INDEXTERMS ("Apache")) OR (INDEXTERMS ("Area Under Curve")) OR (INDEXTERMS ("Bayes Theorem")) OR (INDEXTERMS ("Behavioral Risk Factor Surveillance System")) OR (INDEXTERMS ("Biostatistics")) OR (INDEXTERMS ("Calibration")) OR (INDEXTERMS ("Cluster Analysis")) OR (INDEXTERMS ("Critical Pathways")) OR (INDEXTERMS ("Data Interpretation, Statistical")) OR (INDEXTERMS ("Decision Support Techniques")) OR (INDEXTERMS ("Decision Theory")) OR (INDEXTERMS ("Discriminant Analysis")) OR (INDEXTERMS ("Disease-Free Survival")) OR (INDEXTERMS ("Evaluation Studies as Topic")) OR (INDEXTERMS ("Evaluation Studies")) OR (INDEXTERMS ("Benchmarking")) OR (INDEXTERMS ("Decision Trees")) OR (INDEXTERMS ("Health Status Indicators")) OR (INDEXTERMS ("Factor Analysis, Statistical")) OR (INDEXTERMS ("Failure to Rescue, Health Care")) OR (INDEXTERMS ("Forecasting")) OR (INDEXTERMS ("Kaplan-Meier Estimate")) OR (INDEXTERMS ("Karnofsky Performance Status")) OR (INDEXTERMS ("Life Tables")) OR (INDEXTERMS ("Likelihood Functions")) OR (INDEXTERMS ("Linear Models")) OR (INDEXTERMS ("Logistic Models")) OR (INDEXTERMS ("Markov Chains")) OR (INDEXTERMS ("Matched-Pair Analysis")) OR (INDEXTERMS ("Medical Futility")) OR (INDEXTERMS ("Models, Statistical")) OR (INDEXTERMS ("Monte Carlo Method")) OR (INDEXTERMS ("Nomograms")) OR (INDEXTERMS ("Odds Ratio")) OR (INDEXTERMS ("Organ Dysfunction Scores")) OR (INDEXTERMS ("Patient Acuity")) OR (INDEXTERMS ("Position-Specific Scoring Matrices")) OR (INDEXTERMS ("Pregnancy Outcome")) OR (INDEXTERMS ("Principal Component Analysis")) OR (INDEXTERMS ("Probability")) OR (INDEXTERMS ("Program Evaluation")) OR (INDEXTERMS ("Progression-Free Survival")) OR (INDEXTERMS ("Propensity Score")) OR (INDEXTERMS ("Proportional Hazards Models")) OR (INDEXTERMS ("Protective Factors")) OR (INDEXTERMS ("Quality-Adjusted Life Years")) OR (INDEXTERMS ("Regression Analysis")) OR (INDEXTERMS ("Reproducibility of Results")) OR (INDEXTERMS ("Risk Assessment")) OR (INDEXTERMS ("Risk Factors")) OR (INDEXTERMS ("Risk")) OR (INDEXTERMS ("Roc Curve")) OR (INDEXTERMS ("Sickness Impact Profile")) OR (INDEXTERMS ("Signal-To-Noise Ratio")) OR (INDEXTERMS ("Simplified Acute Physiology Score")) OR (INDEXTERMS ("Survival Analysis")) OR (INDEXTERMS ("Survival Rate")) OR (INDEXTERMS ("Survival")) OR (INDEXTERMS ("Uncertainty")) OR (INDEXTERMS ("Validation Studies As Topic")) OR (INDEXTERMS ("Validation Studies")) OR (TITLE-ABS-KEY ("near miss* ")) OR (TITLE-ABS-KEY ("acute physiology and chronic health evaluat* ")) OR ((TITLE-ABS-KEY ("adverse outcome*")) (TITLE-ABS-KEY ("index*")) OR TITLE-ABS-KEY ("indices"))) OR ((TITLE-ABS-KEY ("bivariat*") W/3 TITLE-ABS-KEY ("Gompertz*"))) OR ((TITLE-ABS-KEY ("critical") W/2 (TITLE-ABS-KEY ("path") OR TITLE-ABS-KEY ("paths") OR TITLE-ABS-KEY ("pathway") OR TITLE-ABS-KEY ("pathways")))) OR ((TITLE-ABS-KEY ("decision") W/2 TITLE-ABS-KEY ("tree*"))) OR ((TITLE-ABS-KEY ("decision*") W/2 TITLE-ABS-KEY ("aid*"))) OR ((TITLE-ABS-KEY ("decision*") W/2 TITLE-ABS-KEY ("analy*"))) OR ((TITLE-ABS-KEY ("decision*") W/2 TITLE-ABS-KEY ("model*"))) OR ((TITLE-ABS-KEY ("decision*") W/2 TITLE-ABS-KEY ("techni*"))) OR ((TITLE-ABS-KEY ("logistic*") W/2 TITLE-ABS-KEY ("model*"))) OR ((TITLE-ABS-KEY ("logistic*") W/2 TITLE-ABS-KEY ("regression*"))) OR ((TITLE-ABS-KEY ("multivariab*") W/3 TITLE-ABS-

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PubMed-NOT-Medline

Search	Query	Items found
#18	<p>Search (((((((("Emergence Delirium"[Mesh:NoExp]) OR (Delirium[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Cognition[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR ("Psychomotor Agitation"[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR ("Stress, Psychological"[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Anxiety[Mesh:NoExp] AND ("Anesthesia and Analgesia"[Mesh] OR Anesthetics[Mesh] OR "Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Postoperative Complications"[Mesh] OR "Surgical Procedures, Operative"[Mesh] OR "surgery"[subheading])) OR (Anxiety[Mesh:NoExp] OR ((emergence[tw] AND agitat*[tw])) OR ((postanesthetic[tw] AND agitat*[tw])) OR ((postanaesthetic[tw] AND agitat*[tw])) OR ((post-anesthetic[tw] AND agitat*[tw])) OR ((post-anaesthetic[tw] AND agitat*[tw])) OR ((recovery[tw] AND agitat*[tw])) OR (deliri*[tw] AND ((anesth* OR anaesth* OR postop* OR post-op OR postanesth* OR post-anaesth* OR postanaesthesia OR postanesthesia OR surgery OR surgeries OR surgical OR operation OR operations) OR "surgery"[subheading] OR "surgical procedures, operative"[Mesh])) OR ((agitat*[tw] AND emergence[tw])) OR ((emergence[tw] AND excitement[tw])) OR ((postanesthe*[tw] AND excitement[tw])) OR ((post-anesthe*[tw] AND excitement[tw])) OR ((postanaesthe*[tw] AND excitement[tw])) OR ((post-anaesthe*[tw] AND excitement[tw])) OR ((postop*[tw] AND agitat*[tw])) OR ((post-op*[tw] AND agitat*[tw])) OR ((postsurg*[tw] AND agitat*[tw])) OR ((post-surg*[tw] AND agitat*[tw])) OR ((postanesth*[tw] AND agitat*[tw])) OR ((post-anesth*[tw] AND agitat*[tw])) OR ((postanaesth* AND agitat*[tw])) OR ((post-anaesth* AND agitat*[tw])) OR ((emergence[tw] AND agitation[tw])) OR ((emergence[tw] AND delirium[tw]))) AND (((Infant[Mesh]) OR (Child[Mesh]) OR (Adolescent[Mesh]) OR ("Child, Preschool"[Mesh:NoExp]) OR ("Adolescent Health Services"[Mesh:NoExp]) OR ("Adolescent Health"[Mesh:NoExp]) OR ("Adolescent Medicine"[Mesh:NoExp]) OR ("Adolescent, Hospitalized"[Mesh:NoExp]) OR ("Adolescent, Institutionalized"[Mesh:NoExp]) OR ("Child, Hospitalized"[Mesh:NoExp]) OR ("Child, Institutionalized"[Mesh:NoExp]) OR ("Child Care"[Mesh]) OR ("Child Health Services"[Mesh]) OR ("Child Welfare"[Mesh]) OR ("Infant Welfare"[Mesh]) OR ("Maternal Health Services"[Mesh]) OR ("Maternal Welfare"[Mesh]) OR ("Maternal-Child Health Centers"[Mesh]) OR ("Maternal-Child Nursing"[Mesh]) OR (Pediatrics[Mesh]) OR (Neonatology[Mesh:NoExp]) OR (Perinatology[Mesh:NoExp]) OR ("Schools, Nursery"[Mesh:NoExp]) OR ("early intervention (education)"[Mesh:NoExp]) OR ((boy[tw] OR boys[tw])) OR ((girl[tw] OR girls[tw])) OR ((gradeschool*[tw] OR "grade school*" [tw])) OR ((highschool*[tw] OR "high school*" [tw])) OR ((kid[tw] OR kids[tw])) OR ((minor[tw] OR minors[tw])) OR ((youth*[tw] OR youths*[tw])) OR (adolescen*[tw]) OR (babies[tw]) OR (baby*[tw]) OR ((child[tw] OR childhood*[tw] OR children*[tw])) OR ("elementary school*" [tw]) OR (infanc*[tw]) OR (infant*[tw]) OR ("junior high*" [tw]))</p>	33

	<p>OR (juvenile*[tiab]) OR (kindergarten*[tw]) OR ("middle school"*[tw]) OR (neonat*[tw]) OR (neonat*[tw]) OR (newborn*[tw]) OR (new-born*[tw]) OR ("nursery school"*[tw]) OR (paediatr*[tw]) OR (pediatr*[tw]) OR (perinatal*[tw]) OR (peri-natal*[tw]) OR (preadoles*[tw]) OR (pre-adoles*[tw]) OR (premie[tw]) OR (premies[tw]) OR (premie*[tw]) OR (preschool*[tw]) OR (pre-school*[tw]) OR (schoolage*[tw]) OR (schoolchild*[tw]) OR ("senior high"*[tw]) OR (stepchild*[tw]) OR (teen*[tiab]) OR (toddler*[tw]) OR (weanling*[tw]))) AND (((Biostatistics[Mesh:NoExp]) OR (Calibration[Mesh:NoExp]) OR ("Cluster Analysis"[Mesh:NoExp]) OR ("Critical Pathways"[Mesh:NoExp]) OR ("Data Interpretation, Statistical"[Mesh:NoExp]) OR ("Decision Support Techniques"[Mesh:NoExp]) OR ("Decision Theory"[Mesh:NoExp]) OR ("Discriminant Analysis"[Mesh:NoExp]) OR ("Disease-Free Survival"[Mesh:NoExp]) OR ("Evaluation Studies as Topic"[Mesh:NoExp]) OR ("Evaluation Studies"[pt]) OR (Benchmarking[Mesh]) OR ("Decision Trees"[Mesh]) OR ("Health Status Indicators"[Mesh]) OR ("Factor Analysis, Statistical"[Mesh:NoExp]) OR ("Failure to Rescue, Health Care"[Mesh:NoExp]) OR (Forecasting[Mesh:NoExp]) OR ("Kaplan-Meier Estimate"[Mesh:NoExp]) OR ("Karnofsky Performance Status"[Mesh:NoExp]) OR ("Life Tables"[Mesh:NoExp]) OR ("Likelihood Functions"[Mesh:NoExp]) OR ("Linear Models"[Mesh:NoExp]) OR ("Logistic Models"[Mesh:NoExp]) OR ("Markov Chains"[Mesh:NoExp]) OR ("Matched-Pair Analysis"[Mesh:NoExp]) OR ("Medical Futility"[Mesh:NoExp]) OR ("Models, Statistical"[Mesh:NoExp]) OR ("Monte Carlo Method"[Mesh:NoExp]) OR (Nomograms[Mesh:NoExp]) OR ("Odds Ratio"[Mesh:NoExp]) OR ("Organ Dysfunction Scores"[Mesh:NoExp]) OR ("Patient Acuity"[Mesh:NoExp]) OR ("Position-Specific Scoring Matrices"[Mesh:NoExp]) OR ("Pregnancy Outcome"[Mesh:NoExp]) OR ("Principal Component Analysis"[Mesh:NoExp]) OR (Probability[Mesh:NoExp]) OR ("Program Evaluation"[Mesh:NoExp]) OR ("Progression-Free Survival"[Mesh:NoExp]) OR ("Propensity Score"[Mesh:NoExp]) OR ("Proportional Hazards Models"[Mesh:NoExp]) OR ("Protective Factors"[Mesh:NoExp]) OR ("Quality-Adjusted Life Years"[Mesh:NoExp]) OR ("Regression Analysis"[Mesh:NoExp]) OR ("Reproducibility of Results"[Mesh:NoExp]) OR ("Risk Assessment"[Mesh:NoExp]) OR ("Risk Factors"[Mesh:NoExp]) OR (Risk[Mesh:NoExp]) OR ("Roc Curve"[Mesh:NoExp]) OR ("Sickness Impact Profile"[Mesh:NoExp]) OR ("Signal-To-Noise Ratio"[Mesh:NoExp]) OR ("Simplified Acute Physiology Score"[Mesh:NoExp]) OR ("Survival Analysis"[Mesh:NoExp]) OR ("Survival Rate"[Mesh:NoExp]) OR (Survival[Mesh:NoExp]) OR (Uncertainty[Mesh:NoExp]) OR ("Validation Studies As Topic"[Mesh:NoExp]) OR ("Validation Studies"[pt]) OR ("near miss"*[tw]) OR ("acute physiology and chronic health evaluation"[tw]) OR ((adverse outcome* AND (index* OR indices))) OR ((bivariat*[tw] AND Gompertz*[tw]) OR ((critical AND (path OR paths OR pathway OR pathways))) OR ("decision tree"[tw]) OR ("decision trees"[tw]) OR (decision*[tw] AND aid*[tw]) OR (decision*[tw] AND analy*[tw]) OR (decision*[tw] AND model*[tw]) OR (decision*[tw] AND techni*[tw]) OR (logistic*[tw] AND model*[tw]) OR (logistic*[tw] AND regression*[tw]) OR ((multivariab*[tw] AND Gompertz*[tw]) OR ((prediction[tw] AND (model[tw] OR tool[tw] OR rule[tw]))) OR ((predictive[tw] AND ("value of tests"[tw] OR model[tw]))) OR ((prognostic*[tw] AND (scor* OR index** OR indices OR rate* OR rating* OR model* OR tool*)) OR (prognostic*[tw] AND strateg*[tw]) OR ("receiver operating characteristic"*[tw]) OR (regression[tw] AND analy*[tw]) OR ((risk[tw] AND calculat*[tw])) OR ((risk AND (adjust* OR assess* OR scor* OR engine* OR equation* OR algorithm* OR table* OR function*)) OR ((roc[tw] AND curve*[tw]) OR ((validation[tw] OR discrimination[tw] OR calibration[tw]) OR (algorith*[tw]) OR (algorism*[tw]) OR (algorithm*[tw]) OR (APACHE[tw]) OR (Bayesian[tw]) OR ("bench mark"*[tw]) OR (benchmark*[tw]) OR (c-index*[tw]) OR (c-statistic*[tw]) OR (Charlson[tw]) OR ((comorbid*[tw] AND (index*[tw] OR indices[tw]))) OR ((co-morbid*[tw] AND (index*[tw] OR indices[tw]))) OR ("concordance statistic"*[tw]) OR ((Cox[tw] AND model*[tw])) OR ("decision tree"*[tw]) OR (Elixhauser[tw]) OR ("flow chart"*[tw]) OR (flowchart*[tw]) OR ("goodness of fit"[tw]) OR ("hazard* model"*[tw]) OR ("hazard* ratio"*[tw]) OR ("HL test"*[tw]) OR (Hosmer-</p>	
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	<p>Lemeshow*[tw] OR ("Kaplan Meier*[tw] OR ("log-rank test*[tw] OR ("median survival time*[tw] OR (MODS[tw] OR ("mortality index*[tw] OR ("mortality indices"[tw] OR (MPM[tw] OR (predict*[tw] OR ("prognostic model*[tw] OR ("propensity score"[tw] OR ("propensity scores"[tw] OR ("propensity scoring"[tw] OR ("random-effect* model*[tw] OR ("risk ratio"[tw] OR ("risk ratios"[tw] OR (SAPS[tw] OR (SOFA[tw]))) AND (((adolescence[ti] OR adolescent[ti] OR adolescents[ti] OR babies[ti] OR baby[ti] OR child[ti] OR childhood[ti] OR children[ti] OR infancy[ti] OR infant[ti] OR infants[ti] OR neonatal[ti] OR neonatally[ti] OR neonate[ti] OR neonates[ti] OR newborn[ti] OR newborns[ti] OR paediatric[ti] OR paediatrician[ti] OR paediatricians[ti] OR paediatrics[ti] OR pediatric[ti] OR pediatrician[ti] OR pediatricians[ti] OR pediatrics[ti] OR teen[ti] OR teenage[ti] OR teenagers[ti] OR teens[ti]))) AND (((publisher[sb] NOT pubstatusnihms NOT pubstatuspmcsd NOT pmcbook) OR inprocess[sb] OR pubmednotmedline[sb] OR ((pubstatusnihms OR pubstatuspmcsd) AND publisher[sb])))</p>	
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WHO ICTRP

9 records for 9 trials found for: emergence delirium OR emergence agitation OR emergence excitement AND prediction

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63 results

("emergence delirium" OR "emergence agitation" OR "emergence excitement") AND predict* AND (adolescence OR adolescent OR adolescents OR babies OR baby OR boy OR boys OR child OR childhood OR children OR girl OR girls OR infancy OR infant OR infants OR neonatal OR neonatally OR neonate OR neonates OR newborn OR newborns OR paediatric OR paediatrician OR paediatricians OR paediatrics OR pediatric OR pediatrician OR pediatricians OR pediatrics OR teen OR teenage OR teenagers OR teens OR youth OR youths)

- Additional limits - Manuscript type: Doctoral dissertations
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eAppendix 2. Summary of inclusion and exclusion criteria.

Inclusion Criteria

- Age of patients in study < 18 years
- Patients undergoing general anesthesia
- Study design is either
 - Randomized controlled trial
 - Cohort studies
 - Case-control studies
- Predictive models for emergence delirium (including discrimination and calibration data)
- Emergence delirium or emergence agitation is a study outcome
- Prediction model applied preoperatively or intraoperatively
- Outcome measured in PACU

Exclusion Criteria

- Editorials, Reviews, Abstracts or Conference Proceedings
- Ineligible study designs
 - Case-series
 - Case reports
 - Animal studies
- No relevant population or study setting
 - Age > 18 years
 - Pt not undergoing general anesthesia (e.g. sedation)
- No relevant intervention or outcome
 - No prognostic predictive model for emergence delirium reported
 - Report of diagnostic models for emergence delirium
 - Emergence delirium not reported
- Duplications
 - Assess Inclusion/Exclusion for only one of duplications
 - The rest should be excluded as duplications



PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.	6
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7, Appendix2
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6, Appendix1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7, 8
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7, 8
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	8
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	7, 8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ² for each meta-analysis).	8



PRISMA 2009 Checklist

Page 1 of 2

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7, 8
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9, Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICO, follow-up period) and provide the citations.	9-11, Table 1, 2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	11, Table 2, eTable 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	9-11, Table 1, 2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-13
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	13, 14
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data, role of funders for the systematic review).	2

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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