How WEIRD are the South African Acute Pain Guidelines? An analysis of the 2015 South African Acute Pain Guidelines.

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Thesis Presented for the Degree of
Master of Medicine (MMed) in Anaesthesia
In the Department of Anaesthesia and Perioperative Medicine
Faculty of Health Sciences
UNIVERSITY OF CAPE TOWN

Supervisor: Professor Romy Parker

Declaration

I, Raees Deedat, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor part of it has been, is being, or is to be submitted for another degree in University of Cape Town or any other university.

This dissertation has been submitted to the Turnitin module (or equivalent similarity and originality checking software) and I confirm that my supervisor has seen my report and any concerns revealed by such have been resolved with my supervisor.

This thesis is presented in fulfilment of the requirements for the degree of MMed (Anaesthesia)

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Dr Raees Deedat

Signed by candidate

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Date:

10/10/2022

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Acknowledgments, format and contributions

This dissertation has been prepared for submission to the Southern African Journal of Anaesthesia and Analgesia (SAJAA). The formatting and referencing convention utilised by SAJAA, namely the Vancouver style, will be used throughout this dissertation. I am grateful for the guidance and input provided by my supervisor, Professor Romy Parker towards the conceptualisation and finalisation of this dissertation. I am also indebted to my dear wife, Nurina Ally, for her support. I declare that the dissertation is my own work and that data obtained from other authors are referenced in accordance with medical research and ethical guidelines. No conflicts of interests declared.

Word Count: 2893 words.

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Abstract

Title: How WEIRD are the South African Acute Pain Guidelines? An analysis of the 2015 South African Acute Pain Guidelines.

Author(s): Dr Raees Deedat and Professor Romy Parker

Date: 28 March 2022

Key words: pain guidelines; pain; WEIRD; representation; selection bias

Background: There is increasing recognition that health care research is biased owing to skewed reliance on data from WEIRD (Western, Educated, Industrialized, Rich, Democracies) populations. This research explores health care discrepancy, primarily experienced by *non*-westernised, *non*-industrialised, *non*-rich and *non*-white people in the context of formulating the South African Acute Pain Guidelines, 2015 as published by the South African Society of Anaesthesiologists (the extant protocol at the time of writing).

Methods: An established, peer-reviewed and published WEIRD (Western, Educated, Industrialized, Rich, Democracies) / non-WEIRD protocol for categorizing clinical population datasets was applied to the published datasets used in formulating the 2015 South African Acute Pain Guidelines.

Results: A total of 5,246,847 patient data points were included in the numerous studies that formed part of the final analysis. Only 1% (n=73,539) of the patient data points originated from countries classified as non-WEIRD.

Conclusions: The results confirmed the hypothesis that the 2015 South African Acute Pain Guidelines are based primarily on data from WEIRD population datasets. This study reveals an important type of bias in the scientific pain literature and also demonstrates a form of analysis that will encourage future published guidelines and research to be more inclusive of the depth and diversity of South African clinical practice.

How WEIRD are the South African Acute Pain Guidelines? An analysis of the 2015 South African Acute Pain Guidelines.

Introduction

Covid-19, as a global clinical impact event, has given humanity cause to pause and reflect at multiple levels on the current state of our health care ecosystem. A key reflection is the clear discrepancy in access to health care and associated health-related outcomes.[1,2,3] Health care discrepancy, primarily experienced by *non*-westernised, *non*-industrialised, *non*-rich and people of *non*-European extraction, has stimulated clinicians, academics and policy-makers to review and direct their activities to achieve improved health care outcomes for all humanity.[4,5,6] Health care professionals involved in clinical pain management, an essential component in the healthcare ecosystem, are currently engaging on these issues.[7,8] Recently, Begasse de Dahem et al[8] have formulated an eleven-point plan to facilitate participation of underrepresented groups in clinical pain research. One of the priority goals of the plan is to ensure explicit reporting of the race, ethnicity and proportional representation of study populations (especially if these data sets are incorporated into future clinical guidelines/consensus documents). Their recommendations reflect the need for acknowledging and assessing the extent to which clinical pain research and the data which is generated from this research may be biased owing to skewed reliance on evidence emerging from WEIRD (Western, Educated, Industrialized, Rich, Democracies) population groups. This study will contribute to this emerging area through an analysis of the 2015 South African Acute Pain Guidelines, the most recent guideline extant at the time of this study's ethical approval.

Pain

The 'International Association for the Study of Pain' (IASP)[9] added 6 'Key Notes' to their updated definition of pain as follows:

'An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.

1. Pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.

2. Pain and nociception are different phenomena. Pain cannot be inferred solely from activity in sensory neurons.
3. Through their life experiences, individuals learn the concept of pain.
4. A person's report of an experience as pain should be respected.
5. Although pain usually serves an adaptive role, it may have adverse effects on function and social and psychological well-being.
6. Verbal description is only one of several behaviours to express pain; inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.'

This extended definition provides a summary of the current state of the pain literature, which is normatively moving away from inferring pain as a uni-dimensional, homogeneously universal and objective human 'vital sign'[10] towards a multi-dimensional, and individualistic Bio-Psycho-Social (BPS) model for clinical pain diagnosis and management.[7] The BPS model incorporates static and dynamic variables which contribute to variations in the pain experience within its framework. Static variables include race, sex, age, and socioeconomic status (SES).[15] Dynamic variables - such as geographic spread/immigration;[5] intersectionality;[11] cultural anthropology;[12] financial distress;[13] personal experiences related to discrimination, dismissal, violence, stigma as well as access to and quality of health care[14]- while incorporated in the framework, have been less well modelled because they are difficult to define, research and ultimately implement.[15] Despite this limitation, the BPS model remains the current gold standard for the clinical management of chronic pain;[16] chronification of acute pain;[17] as well as understanding the variables involved in predicting acute post-operative pain.[18]

Pain and the problem of Western bias

Historically, the Western health-care model of 'mind-body dualism' conceptualized *the body* and *the mind* as two separate entities functioning independently of each other and independently of the societal and environmental issues that an individual inhabits.[19] Not only does this contrast with non-Western societies' pluralistic health care models[20] but most recent Western scientific evidence within pain research favours a more pluralistic model and interpretation as exampled by the BPS approach to pain management described above.[15] Importantly, historically dualistic Western interpretations of health care research and

phenomena are still evident in the literature but are frequently not explicitly disclosed as a potential bias when making conclusions or interpretations.[5]

Clinical practice guidelines and Western bioethics

Clinical practice guidelines are developed to assist clinicians in navigating the scientific literature efficiently, appropriately and in an up-to-date, non-biased manner.[21] The US Institute of Medicine recommends that guidelines incorporate systematic evidence for specific clinical circumstances, with the goal of being generalisable to the specific population. Moreover, deviation away from recommended guidelines needs to be individually justified and or defended.[22] From a South African viewpoint, it is important to note that the methods used to generate the evidence supporting the 'generalisable' guidelines are, in the main, still only scrutinised under the sanction of Western universities' Research Ethics Boards, who impart a Western worldview, reflecting traditions of Western moral philosophy, culture, methodological perspectives, political and social theory.[23] The current medical literature is skewed in the direction of Western, college-aged white American males.[5,26] Some South African academics, particularly from a clinical psychology perspective, have echoed additional concerns, noting the Western colonial influence[24] and high levels of Western funding directing South African research output.[25] This adds a further perspective when reviewing clinical practice guidelines, especially when translating research for clinical practice in non-Western countries, and leads to the rationale for this study.

Definition and research question

What is a 'Western' population dataset? A full exposition of this specific terminology is beyond the scope of this article. Exact categorization and justification are found in the literature researching and describing WEIRD.[5,26] However, historically, a 'Western' population dataset referred to American, white, male, undergraduates, which has been argued to be the least representative population for generalising about humans.[26] The WEIRD classification, which is broader, has been explained to be a 'rhetorical device' used to 'raise concerns about sample diversity and the generalisation of findings from one population to another'.[5]

For consistency this study will frame the research question as follows:

To what extent are the 2015 South African Society of Anaesthetists Acute Pain Guidelines informed by scientific evidence based on WEIRD population datasets? The null hypothesis being that the SASA Guidelines are not based primarily on WEIRD populations datasets.

Methodology

A retrospective analysis of the 2015 South African Society of Anaesthetists Acute Pain Guidelines ('2015 SASA Guidelines') as well as the 'Acute Pain Management: Scientific Evidence' Fourth Edition 2015 ('Scientific Evidence') (published by the Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine)[27] was conducted. The latter document specifically references the various population data sets used to inform the SASA guidelines and therefore needed to be analysed concurrently with the South African guideline. The Scientific Evidence review period was from August 2009 to August 2014.

The classification of WEIRD and non-WEIRD world regions used for the analysis was based on the taxonomy utilised by Gurven and Lieberman ,[5] as included in Supplementary Appendix B (Table 2), A total of 637 references including evidence containing clinical patient datasets (i.e. systematic reviews, meta-analyses, randomised and non-randomised controlled trials) of the 5,540 references cited in the Scientific Evidence of the 2015 SASA Guidelines were included in the analysis. References to narrative reviews, case studies, and other guidelines were excluded, as were references pertaining to subject areas that are not covered in the SASA Guidelines and which were used solely to support methodological background. The references that were analysed are included in the supplementary Appendix B (Tables 3-23).

The references were categorised into specific domain areas, based on the domains established in the 2015 SASA Guidelines (supplemental Appendix B: Table 1). Each reference listed within a specific domain area was sourced. The data referred to in the references were screened to identify the characteristics of the clinical patient data-sets.

Of the 637 references analysed, 67 were excluded in the final analysis based on Gurven and Lieberman's methodology.[5] First, to avoid duplication, 39 references were excluded as the data sets were also included in included systematic reviews. Second, 14 studies which had been retracted or which were not accessible, were excluded. Third, 14 references were excluded for having been incorrectly identified as containing clinical patient datasets, or

which otherwise did not contain clinical evidence directly relevant to the domain in question. References that were excluded were identified as such within each domain (supplemental Appendix B: Tables 3-23).

For each reference, the population datasets on which the study relied were tabulated and allocated to WEIRD and non-WEIRD world regions as defined by Gurven & Lieberman[5] (supplemental appendix B: Table 2). Ethical approval was granted by the University of Cape Town, Faculty of Health Sciences, Human Research Ethics Committee (Ref: 604/2021) (Appendix A).

Data analysis

Data were extracted and tabulated, with a pie graph generated for each individual domain as well as for the final full aggregate data set for all domains within the SASA Guideline (supplemental Appendix B: Tables 3-23). Notably, the analysis included identification of meta-analysis/systematic reviews that attempt to incorporate diverse data sets as well as those that do not incorporate any data sets from Sub-Saharan Africa. As a retrospective analysis, the analysis (conducted in 2021) also identified data-sets that had been retracted, corrected or flagged as suspicious subsequent to the publication of the guidelines in 2015 (as recorded in supplemental Appendix B: Tables 3-23).

Results

All data analysis has been included in the supplemental appendix B. Due to space constraints, the overall results of the study and those of selected individual domains are presented here.

Overall:

A total of 5,246,847 patient data points were included in the numerous studies that formed the final analysis. Only 1% (n=73,539) of patient data points originated from non-WEIRD classified countries (Figure 1).

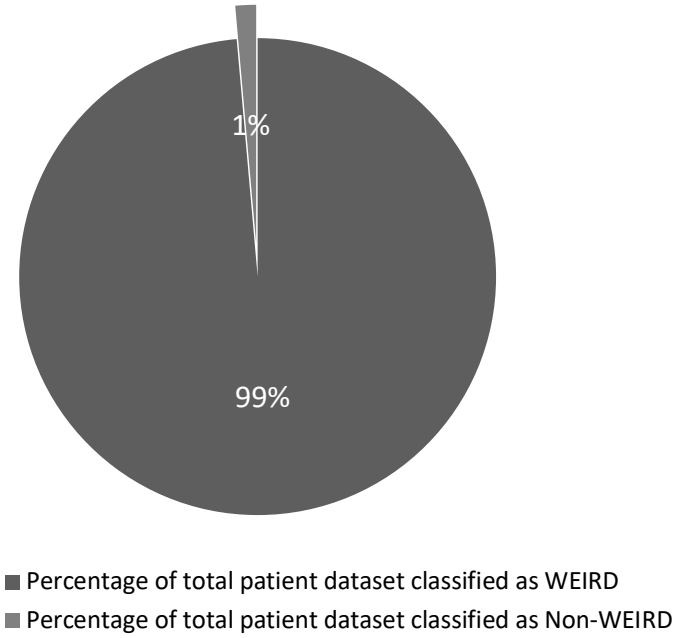

Figure 1: Percentage of total patient dataset (based on all domains) classified as WEIRD and non-WEIRD (n=5 246 847)

The overall results are reflected in the majority of the individual domains, listed here (with percentages of population datasets from non-WEIRD countries in brackets);
Psychological aspects of acute pain (8%),
Measurement and Assessment of acute pain (1%),
The physiology of acute pain (2%),
The progression of acute to chronic pain (8%),
Adverse effects of pain (7%),
Epidural analgesia (0.4%),
Nonsteroidal anti-inflammatory (0.2%),
Local anaesthetics (2%),
Acute pain management in the elderly patient (5%),
Locally and regionally administered analgesic drugs (4%),
Patient-controlled analgesia (10%),
Management of acute pain in specific scenarios (3%),
Acute pain in patients with HIV (7%),
Non-pharmacological techniques (15%),
Analgesia during pregnancy, childbirth, the puerperium and lactation (2%),
Paediatric guidelines (1%).

Only two of the individual domains reflected data points emerging from a majority of non-Weird population datasets, namely:
Outcome measures of acute pain (59%)
N-methyl-D-aspartate receptor antagonists (70%)

Acute pain in patients with HIV:

South Africa continues to have a disproportionate percentage of the population infected with HIV and the associated concomitant disease burden.[28] Yet pertinent HIV-related clinical pain research only amounted to 5,043 patients in the review cycle preceding the 2015 pain guidelines, with a mere 359 patients coming from non-WEIRD sources (Figure 2).

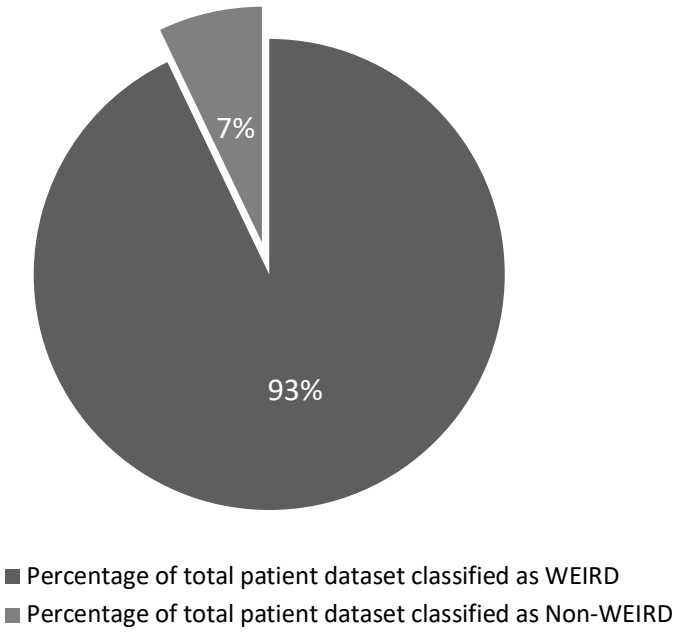

Figure 2: Percentage of patient dataset classified as WEIRD and non-WEIRD in 'Acute pain in patients with HIV' domain (n=5043)

Non-pharmacological techniques:

Similar to acute pain in patients with HIV, the domain on non-pharmacological techniques would traditionally be associated with non-WEIRD nations.[5] Yet, this domain also showed a majority representation of WEIRD population datasets. Two Cochrane reviews were included

in this domain's review cycle with 15.3% representation of non-WEIRD countries. However, no data from Africa were included, with the bulk of data still coming from WEIRD countries.

Pharmacological intervention:

Opioids accounted for 4,776 patient data points, with 18.3% coming from non-WEIRD countries. The review period of the SASA Guidelines included many small participant trials with novel agents (IV Morphine-6-glucuronide & sublingual buprenorphine). However, the patient data points presented here do not include those of one article published in 2001, which was no longer available for review and with no reason cited for withdrawal (supplemental Appendix B: Table 7). As discussed below, this is one of the limitations of the methodology utilised, with the number of patients (data points) in the withdrawn article not known.

Paracetamol and non-steroidal anti-inflammatory drugs accounted for 1,986,311 patient datapoints (the single biggest domain area) with a non-WEIRD inclusion of 12% and 0.2% respectively. The inclusion of large WEIRD population registries datasets accumulated over many decades skewed the overall weighting of these domains.

In contrast, the domain on N-methyl-D-aspartate receptor antagonists– specifically IV/IM/sublingual ketamine - showed the highest non-WEIRD representation amongst all domains, at 70% (Figure 4). Two large systematic reviews were included in the results for this domain. α2 agonists - specially clonidine (as opposed to the newer dexmedetomidine) also showed a higher-than-average non-WEIRD weighting of 45.4% of the overall domain.

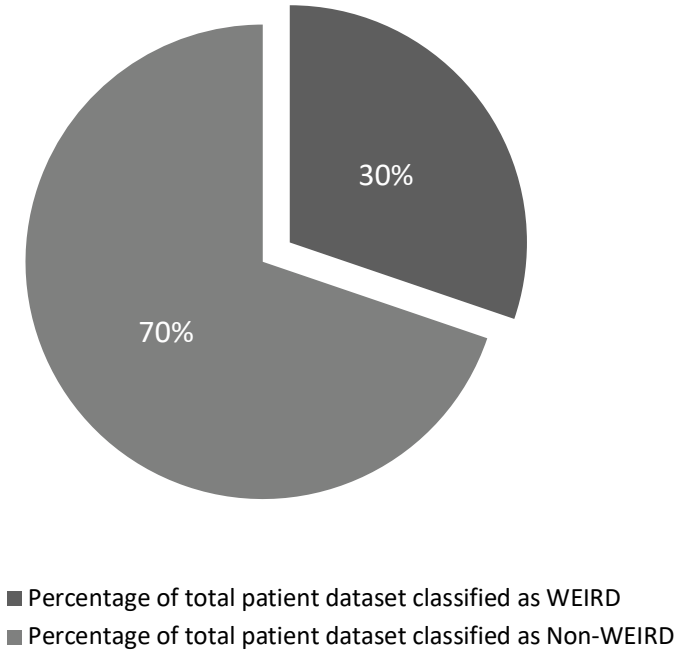

Figure 3: Percentage of patient dataset classified as WEIRD and non-WEIRD in ‘N-methyl-D-aspartate receptor antagonists ‘ domain (n=7057)

Analgesia during pregnancy, childbirth, the puerperium, lactation & Paediatric guidelines:

The reviewing editors of the Scientific Evidence were explicit in stating that these domain areas required more extensive independent guidelines. However, they still attempted to distill the most recent medical literature in the context of acute pain management within this context.[27] For the peripartum literature a total of 256 559 patient datapoints were analysed, including four Cochrane reviews, of which 2.2% of the patients belonged to the non-WEIRD countries (Figure 4).

The paediatric domain had a relatively larger pool of patients – 274,902 excluding a withdrawn 2009 Cochrane review, but only 1% of this total was from non-WEIRD countries (Figure 5).

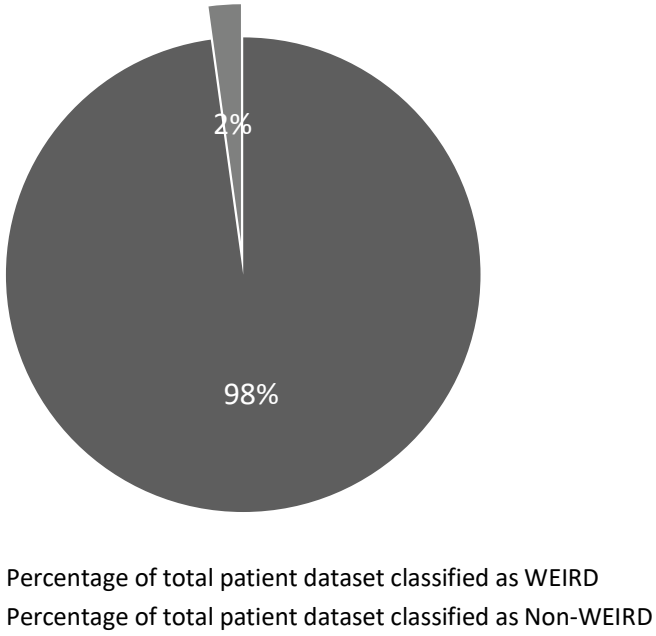

Figure 4: Percentage of patient dataset classified as WEIRD and non-WEIRD in 'Analgesia during pregnancy, childbirth, the puerperium and lactation' domain

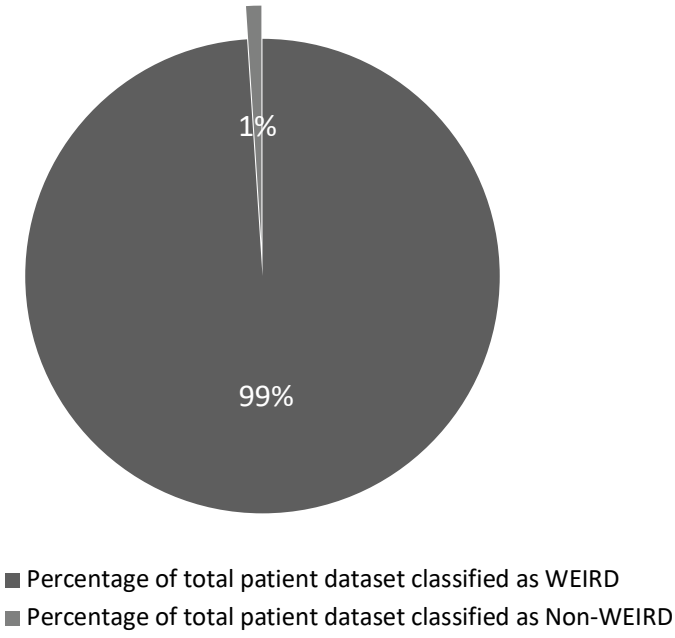

Figure 5: Percentage of patient dataset classified as WEIRD and non-WEIRD in 'Paediatric guidelines' domain (n=274 902)

Discussion

Reviewing published evidence and guidelines prior to revisions and updates are important duties of any editorial committee. In addition to evolving and developing clinical science, changes in societal context should also be considered when evaluating established and peer reviewed literature, specifically when issues of exclusion and underrepresentation are spotlighted.[29]

The results show that the 2015 SASA Guidelines were primarily informed by WEIRD patient datasets. These results mirror the findings of previous research investigating representation of non-WEIRD populations in high impact western medical journals.[5] The authors of that study, on which the methodology of this study has been based, particularity cite pregnant women and children – the majority of whom reside in non-WEIRD countries - as an important point of discrepancy. Similarly, in this study, the domains of HIV; pregnant women and children have been specifically highlighted for their lack of non-WEIRD population dataset representation. It is also notable that no specific Cochrane level systematic review was referenced for the acute pain in patients with HIV domain, apart from a sub-analysis investigating topical capsaicin including patients with chronic HIV infection.

In other words, the 2015 SASA Guidelines for these vulnerable groups are not based on data from the context and situations in which patients live and seek help. This mismatch reflects 'selection bias that ultimately results in a waste of resources and a distortion of the body of evidence', and which may place these vulnerable populations at further risk.[30]

Acknowledging the tremendous contribution of Western science and rigorous research methods in health care to date,[5,29] the next generation of researchers should be spurred on to carry the baton to the rest of the world. In this way, analogous to what African American researchers in the US are doing to represent their own population in relevant medical studies,[8] South African researchers can contribute toward reducing health care disparities and advancing greater equity in health care. This research is a small, easily reproducible and impactful contributor in spotlighting areas of pain research that require urgent focus, and de-prioritizing areas that are already well represented.

Limitations

This methodology has similarities to those used in a systematic review/meta-analysis (eg Cochrane Review), but does not have specified protocols on how to weigh individual studies. Nor are methods described to reduce errors in transcription when handling large amounts of data. However, the method is well designed to give an overall impression as to the sources of evidence used in formulating a clinical guideline/consensus document.

Handling of missing data or retracted data is not explicitly mentioned in the study describing the methods on which this research was based.[5] Individual studies need to be sourced and verified in order to correctly allocate the data sets to either non-WEIRD or WEIRD. In the absence of a protocol for handling missing or retracted data, this study excluded data points which could not be accessed, as has been recorded in the supplementary table (supplementary Appendix B).

Despite these limitations, and consistent with findings across the medical literature[5,30], the results show skewing toward WEIRD populations to such an extent that excluded data points would not have significantly changed the results. Artificial intelligence and related computer algorithms may offer opportunities for mitigating these limitations in the future and could easily provide greater depth and insight if appropriately coded and conceptualised.

Conclusion

This study rejects the null hypothesis that states that the 2015 SASA Acute Pain guidelines are not predominantly influenced by WEIRD population datasets. This study's identification of WEIRD bias in the SASA Guidelines contributes to emerging literature on the broad themes of inclusion; equality; bias and health-care and health-outcome discrepancies. In line with expected review cycles, the 2015 SASA guidelines have recently been updated and replaced. However, the broader topics raised in this thesis remain relevant and should encourage further debate and introspection amongst the editorial committees; academics and ultimately end-users of such guidelines for the end goal of striving to continually improve the lives and wellbeing of those seeking care. This methodology may be used by editorial committees developing guidelines of the need to contextualise guidelines.

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Appendix A: Ethical Approval Letter and annual renewal documents

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

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Website: www.health.uct.ac.za/fhs/research/humanethics/forms

20 September 2021

HREC REF: 604/2021

Prof R Parker
Department of Anaesthesia & Perioperative Medicine
D-23 NGSH
Email: Romy.parker@uct.ac.za
Student: rdeedat@gmail.com

Dear Prof Parker

PROJECT TITLE: HOW WEIRD ARE THE SOUTH AFRICAN ACUTE PAIN GUIDELINES? -MMED CANDIDATE-DR RAEES DEEDAT

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, dated 17 March 2020: 06 July 2020 & 01 July 2021.

Approval is granted for one year until the 30 September 2022.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: - Dr Raees Deedat will also be involved in this study.

Please quote the HREC REF 604/2021 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

HREC/REF 604/2021sa

UNIVERSITY OF CAPE TOWN

HUMAN RESEARCH ETHICS COMMITTEE
26 SEP 2022
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FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

FHS017: Annual Progress Report / Renewal

Record Reviews/Audits/Collection of Biological Specimens/Repositories/Databases/Registries

HREC office use only (FWA00001637; IRB00001938)			
This serves as notification of annual approval, including any documentation described below.			
☑ Approved	Annual progress report	Approved until/next renewal date	30-9-23
☐ Not approved	See attached comments		
Signature Chairperson of the HREC/ Designee		Date Signed	26/9/2022

Note: Please note that incomplete submissions will not be reviewed.
Please email this form and supporting documents (if applicable) in a combined pdf-file to hrec-enquiries@uct.ac.za.

Please clarify your plan for research-related activities during COVID-19 lockdown

Principal Investigator to complete the following:

1. Protocol information

Date (when submitting this form)	26/09/2022		
HREC REF Number	604/2021	Current Ethics Approval was granted until	30/09/22
Protocol title	How WEIRD are the South African Acute Pain Guidelines? An analysis of the 2015 South African Acute Pain Guidelines.		
Principal Investigator	Prof R Parker / Dr R Deedat		
Department / Office Internal Mail Address	romy.parker@uct.ac.za		
1.1 Does this protocol receive US Federal funding?			No

2. Protocol status (tick ✓)

	Research-related activities are ongoing
	Data collection is complete, data analysis only
Please indicate (in the block below) the titles and HREC reference numbers of any projects currently making use of the Database/registry/repository.	
Research completed - at the external examiner stage of the MMED process	

3. Protocol summary

Total number of records or specimens collected, reviewed or stored since the original approval		5 246 847
Total number of records or specimens collected, reviewed or stored since last progress report		0
Have any research-related outputs (e.g. publications, abstracts, conference presentations) resulted from this research? If yes, please list and attach with this report.		No

4. Signature

UNIVERSITY OF CAPE TOWN

FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

Signature of PI	Deedat	Date	26/09/2022

Appendix B: Data Collection Documents

Contents

Table 1 : Domain areas from the South African Society of Anaesthetists Acute Pain Guidelines 2015

Psychological aspects of acute pain	Outcome measures of acute pain	Measurement and Assessment of acute pain
The physiology of acute pain	The progression of acute to chronic pain	Adverse effects of pain
Opioids	Paracetamol	Nonsteroidal anti-inflammatory
N-methyl-D-aspartate receptor antagonists	α2 agonists	Local anaesthetics
Acute pain management in the elderly patient	Analgesia during pregnancy, childbirth, the puerperium and lactation	Locally and regionally administered analgesic drugs
Patient-controlled analgesia	Epidural analgesia	Non-pharmacological techniques
Management of acute pain in specific scenarios	Acute pain in patients with HIV	Paediatric guidelines

Table 2: WEIRD/non-WEIRD world regions used for the analysis

Non-Weird :	**Middle East:**		
Afghanistan	Bahrain	Cyprus	Egypt
Iran	Iraq	Israel	Jordan
Kuwait	Lebanon	Oman	Qatar
Saudi Arabia	Syria	Turkey	UAE
Yemen			
Non-Weird :	**South America:**		

Argentina	Bolivia	Brazil	Chile
Colombia	Ecuador	Guyana	Paraguay
Peru	Surinam	Uruguay	Venezuela
Non-Weird :	**Eastern Europe:**		
Albania	Armenia	Azebaijan	Belarus
Bosnia	Bulgaria	Croatia	Czech Rep
Estonia	Georgia	Hungary	Latvia
Lithuania	Moldova	Poland	Romania
Russia	Serbia	Slovakia	Ukraine
Yugoslavia/Montenegro	Kosovo		
Non-Weird :	**Central America & Caribbean:**		
Antigua/Barbuda	Aruba	Bahamas	Barbados
Belize	Cayman Islands	Costa Rica	Cuba
Dominica	Dominican Rep	El Salvador	Grenada
Guatemala	Haiti	Honduras	Jamaica
Montserrat	Nicaragua	Panama	Puerto Rico
St. Barthelemy	St. Lucia	Trinidad/Tobago	Turks & Caicos
Virgin Islands			
Non-Weird :	**Asia:**		
China	Taiwan	Hong Kong	Japan
S. Korea	N. Korea	Mongolia	Philippines
Vietnam	Indonesia	Thailand	Myanmar
Cambodia	Malaysia	Laos	Singapore
Timor-Leste	Brunei	India	Pakistan

Bangladesh	Nepal	Sri Lanka	Bhutan
Maldives	Uzbekistan	Kazakhstan	Kyrgyzstan
Tajikistan	Turkmenistan	Siberia	
Non-Weird :	**Africa:**		
Algeria	Angola	Benin	Botswana
Burkina Faso	Burundi	Cameroon	Cape Verde
Central African Rep	Chad	Comoros	DRC
Djibouti	Egypt	Equatorial Guinea	Eritrea
Ethiopia	Gabon	Gambia	Ghana
Guinea	Guinea-Bissau	Ivory Coast	Kenya
Lesotho	Liberia	Libya	Madagascar
Malawi	Mali	Mauritius	Mauritania
Morocco	Mozambique	Namibia	Niger
Nigeria	Rwanda	Sao Tome & Principe	Senegal
Seychelles	Sierra Leone	Somalia	South Africa
South Sudan	Sudan	Swaziland	Tanzania
Togo	Tunisia	Uganda	Zambia
Zimbabwe			
Non-Weird :	**Mexico:**		
Weird:	**North, West and South Europe:**		
Andorra	Austria	Belgium	Denmark
Finland	France	Germany	Greece
Iceland	Ireland	Italy	Liechtenstein
Luxembourg	Malta	Monaco	Netherlands

Norway	Portugal	Spain	Sweden
Switzerland	United Kingdom		
Weird:	**Other North America:**		
Canada	Greenland		
Weird:	**Australia**		
Australia	New Zealand		
Weird:	**United States**		

Table 3 Domain: Psychological aspects of acute pain (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Crombez G, Van Ryckeghem DM, Eccleston C et al (2013) Attentional bias to pain-related information: a meta-analysis. Pain 154(4): 497–510.	n=2,035 50 articles selected for meta-analysis.	WEIRD: N,W,S Europe, US, North America, Australia n=1744 Non WEIRD: South Korea n=121 Non-WEIRD: Iran n=170
Jolliffe CD & Nicholas MK (2004) Verbally reinforcing pain reports: an experimental test of the operant model of chronic pain. *Pain* 107(1-2): 167–75.	n=49	WEIRD: Australia
Pavlin DJ, Sullivan MJ, Freund PR et al (2005) Catastrophizing: a risk factor for postsurgical pain. *Clin J Pain* 21(1): 83–90.	n=48	WEIRD: US

Table 3 Domain: Psychological aspects of acute pain (SASA Guidelines 2015)

Jacobsen PB & Butler RW (1996) Relation of cognitive coping and catastrophizing to acute pain and analgesic use following breast cancer surgery. *J Behav Med* 19(1): 17–29.	n=59	WEIRD: US
Granot M & Ferber SG (2005) The roles of pain catastrophizing and anxiety in the prediction of postoperative pain intensity: a prospective study. *Clin J Pain* 21(5): 439–45.	n=38	Non-WEIRD: Israel
Strulov L, Zimmer EZ, Granot M et al (2007) Pain catastrophizing, response to experimental heat stimuli, and post-cesarean section pain. *J Pain* 8(3): 273–79.	n=47	Non-WEIRD: Israel
Roth ML, Tripp DA, Harrison MH et al (2007) Demographic and psychosocial predictors of acute perioperative pain for total knee arthroplasty. *Pain Res Manag* 12(3): 185–94.	n=63	WEIRD: North America
Sommer M, de Rijke JM, van Kleef M et al (2010) Predictors of acute postoperative pain after elective surgery. *Clin J Pain* 26(2): 87–94.	n=1,490	WEIRD: N,W,S Europe
Lautenbacher S, Huber C, Baum C et al (2011) Attentional avoidance of negative experiences as predictor of postoperative pain ratings and consumption of analgesics: comparison with other psychological predictors. *Pain Med* 12(4): 645–53.	n=58	WEIRD: Germany

Table 3 Domain: Psychological aspects of acute pain (SASA Guidelines 2015)

Theunissen M, Peters ML, Bruce J et al (2012) Preoperative anxiety and catastrophizing: a systematic review and meta-analysis of the association with chronic postsurgical pain. *Clin J Pain* 28(9): 819–41.	n=6,628 29 articles selected for the systematic review and meta-analysis	WEIRD: N,W,S Europe, US, North America,
Lewis GN, Rice DA, McNair PJ et al (2015) Predictors of persistent pain after total knee arthroplasty: a systematic review and meta-analysis. *Br J Anaesth* 114(4): 551–61.	n=29,993 32 articles selected for the systematic review and meta-analysis	WEIRD: N,W,S Europe, US, North America, Australia n=29913 Non-WEIRD: India n=80
Wertli, Maria M., et al. "The role of fear avoidance beliefs as a prognostic factor for outcome in patients with nonspecific low back pain: a systematic review." The spine journal 14.5 (2014): 816-836.	n=10531 16 articles selected for systemic review	WEIRD: N,W,S Europe, US, North America, Australia
Archer KR, Seebach CL, Mathis SL et al (2014) Early postoperative fear of movement predicts pain, disability, and physical health six months after spinal surgery for degenerative conditions. Spine J 14(5): 759–67.	n=141	WEIRD: US 81% White
Hinrichs-Rocker A, Schulz K, Jarvinen I et al (2009) Psychosocial predictors and correlates for chronic post-surgical pain (CPSP) - a systematic review. *Eur J Pain* 13(7): 719–30.	n≈25,000 50 articles selected for systemic review	WEIRD: N,W,S Europe, US, North America, Australia n=24890 Non Weird: Israel n=110

Table 3 Domain: Psychological aspects of acute pain (SASA Guidelines 2015)

Phyomaung PP, Dubowitz J, Cicuttini FM et al (2014) Are depression, anxiety and poor mental health risk factors for knee pain? A systematic review. *BMC Musculoskelet Disord* 15: 10.	n=15,113 16 articles selected for systemic review	WEIRD: N,W,S Europe, US, North America, Australia n=12535 Non-WEIRD: Japan n=2290 Non-WEIRD: Egypt n=288
Ip HY, Abrishami A, Peng PW et al (2009) Predictors of postoperative pain and analgesic consumption: a qualitative systematic review. *Anesthesiology* 111(3): 657–77.	n=23,037 48 articles selected for systemic review	WEIRD: N,W,S Europe, US, North America, Australia n=17109 Non-Weird: Taiwan n=1793 Non-Weird: Colombia n=700 Non-Weird: China n=2298 Non-Weird: Brazil n=346 Non-Weird: Israel n=183 Non-Weird: Hong Kong n=509 Non-Weird: Turkey n=99
Pinto PR, McIntyre T, Almeida A et al (2012) The mediating role of pain catastrophizing in the relationship between presurgical anxiety and acute postsurgical pain after hysterectomy. *Pain* 153(1): 218–26.	n=195	WEIRD: Portugal

Table 3 Domain: Psychological aspects of acute pain (SASA Guidelines 2015)

Castillo RC, Wegener ST, Heins SE et al (2013) Longitudinal relationships between anxiety, depression, and pain: results from a two-year cohort study of lower extremity trauma patients. Pain 154(12): 2860–66.	n=545	WEIRD: US 73% White
	Total n=115070 (100%)	WEIRD: n=105998 (92.1%)

Table 4 Domain: The physiology of acute pain (SASA Guidelines 2015)

Studies:	Population data set:	Category:
Hayes C, Browne S, Lantry G et al (2002) Neuropathic pain in the acute pain service: a prospective study. Acute Pain 4: 45–48.	n=51	WEIRD: Australia
Beecher, H. K. (1955). The powerful placebo. Journal of the American Medical Association, 159(17), 1602-1606.	n=1082 15 articles “choosen at random” not RCT	WEIRD: N,W,S Europe, US, North America,
Petersen GL, Finnerup NB, Colloca L et al (2014) The magnitude of nocebo effects in pain: a meta-analysis. Pain 155(8): 1426–34.	n=619 10 RCT	WEIRD: N,W,S Europe, US
Price DD, Milling LS, Kirsch I et al (1999) An analysis of factors that contribute to the magnitude of placebo analgesia in an experimental paradigm. Pain. 83(2): 147–56.	n=40 34 Caucasian, 1 African American, 1 Asian, and 4 Hispanic	WEIRD: US

Voudouris NJ, Peck CL & Coleman G (1989) Conditioned response models of placebo phenomena: further support. Pain 38: 109–16.	n=20	WEIRD: Australia
Voudouris NJ, Peck CL & Coleman G (1990) The role of conditioning and verbal expectancy in the placebo response. Pain 43: 121–28.	Not able to access	Not able to access
Pollo A, Amanzio M, Arslanian A et al (2001) Response expectancies in placebo analgesia and their clinical relevance. Pain. 93(1): 77–84.	n=38	WEIRD: N,W,S Europe
Verne GN, Robinson ME, Vase L et al (2003) Reversal of visceral and cutaneous hyperalgesia by local rectal anesthesia in irritable bowel syndrome (IBS) patients. Pain 105(1–2): 223–30.	n=20	WEIRD: US
Bingel U, Wanigasekera V, Wiech K et al (2011) The effect of treatment expectation on drug efficacy: imaging the analgesic benefit of the opioid remifentanil. Sci Transl Med 3(70): 70ra14.	n=22	WEIRD: N,W,S Europe
Lund K, Vase L, Petersen GL et al (2014) Randomised controlled trials may underestimate drug effects: balanced placebo trial design. PLoS One 9(1): e84104.	n=48	WEIRD: N,W,S Europe
Kessner S, Forkmann K, Ritter C et al (2014) The effect of treatment history on therapeutic outcome: psychological and neurobiological underpinnings. PLoS One 9(9): e109014.	n=39	WEIRD: N,W,S Europe

Colloca L & Benedetti F (2006) How prior experience shapes placebo analgesia. Pain 124: 126–33.	n=30	WEIRD: N,W,S Europe
Colloca L & Benedetti F (2009) Placebo analgesia induced by social observational learning. Pain 144(1-2): 28–34.	n=48	WEIRD: N,W,S Europe
Benedetti F, Amanzio M & Maggi G (1995) Potentiation of placebo analgesia by proglumide. Lancet. 346(8984): 1231.	n=93	WEIRD: N,W,S Europe
Levine JD, Gordon NC & Fields HL (1978) The mechanism of placebo analgesia. Lancet 2(8091): 654–57.	n=93	WEIRD: US
Amanzio M & Benedetti F (1999) Neuropharmacological dissection of placebo analgesia: expectation-activated opioid systems versus conditioning-activated specific subsystems. J Neurosci 19(1): 484–94.	n=229	WEIRD: N,W,S Europe
Benedetti F, Amanzio M, Rosato R et al (2011) Nonopioid placebo analgesia is mediated by CB1	n=82	WEIRD: N,W,S Europe
Petrovic P, Kalso E, Petersson KM et al (2002) Placebo and opioid analgesia--imaging a shared neuronal network. Science. 295(5560): 1737–40.	n=9	WEIRD: N,W,S Europe
Zubieta JK, Bueller JA, Jackson LR et al (2005) Placebo effects mediated by endogenous opioid activity on mu-opioid receptors. J Neurosci 25(34): 7754–62.	n=14	WEIRD: US

Bingel U, Lorenz J, Schoell E et al (2006) Mechanisms of placebo analgesia: rACC recruitment of a subcortical antinociceptive network. Pain 120(1-2): 8–15.	n=19	WEIRD: N,W,S Europe
Eippert F, Finsterbusch J, Bingel U et al (2009) Activation of the opioidergic descending pain control system underlies placebo analgesia. Neuron 63(4): 533–43.	n=48	WEIRD: N,W,S Europe
Atlas LY & Wager TD (2014) A meta-analysis of brain mechanisms of placebo analgesia: consistent findings and unanswered questions. Handb Exp Pharmacol 225: 37–69.	25 studies 5 repeated previously n=404	WEIRD: US n=258 Non-Weird: Taiwan n=48 WEIRD: N,W,S Europe n=98
Hrobjartsson A & Gotzsche PC (2010) Placebo interventions for all clinical conditions. Cochrane Database Syst Rev(1): CD003974.	Pain (incidence) Binary outcomes 6 studies n=1834 Continuous outcomes 60 studies but many repeats n=6809	WEIRD: N,W,S Europe n=5274 WEIRD: US, North America n=3004 Non-Weird: Israel n=62 WEIRD: Australia n=121 Non-WEIRD: Japan n=70 Non-Weird: Taiwan n=100 Non-WEIRD: Thailand 12
Vase L, Riley JL, 3rd & Price DD (2002) A comparison of placebo effects in clinical analgesic trials versus studies of placebo analgesia. Pain. 99(3): 443–52.	Meta analysis of RCT's repeated data	Repeated data

Vase L, Petersen GL, Riley JL, 3rd et al (2009) Factors contributing to large analgesic effects in placebo mechanism studies conducted between 2002 and 2007. Pain 145(1-2): 36–44.	Meta analysis of RCT's repeated data	Repeated data
	Total n=11691	Non-WEIRD n=292 (2%) WEIRD: n=11399 (98%)

Figure 2: The physiology of acute pain

Table 5 Domain: The progression of acute to chronic pain (SASA Guidelines 2015)

Studies:	Population data set:	Category:
Aasvang EK & Kehlet H (2007) Chronic pain after childhood groin hernia repair. J Pediatr Surg 42(8): 1403–08.	n=651	WEIRD: N,W,S Europe
Aasvang EK, Brandsborg B, Christensen B et al (2008) Neurophysiological characterization of postherniotomy pain. Pain 137(1): 173–81.	n= 46	WEIRD: N,W,S Europe
Aasvang EK, Gmaehle E, Hansen JB et al (2010a) Predictive risk factors for persistent postherniotomy pain. Anesthesiology 112(4): 957–69.	n=442	WEIRD: N,W,S Europe
Aasvang EK & Kehlet H (2010b) Persistent sensory dysfunction in pain-free herniotomy. Acta Anaesthesiol Scand 54(3): 291–98.	n=40	WEIRD: N,W,S Europe
Alfieri S, Rotondi F, Di Giorgio A et al (2006) Influence of preservation versus division of ilioinguinal, iliohypogastric, and genital nerves during open mesh herniorrhaphy: prospective multicentric study of chronic pain. Ann Surg 243(4): 553–58.	n=895	WEIRD: N,W,S Europe

Althaus A, Hinrichs-Rocker A, Chapman R et al (2012) Development of a risk index for the prediction of chronic post-surgical pain. Eur J Pain 16(6): 901–10.	n=155	WEIRD: N,W,S Europe
Amr YM & Yousef AA (2010) Evaluation of efficacy of the perioperative administration of Venlafaxine or gabapentin on acute and chronic postmastectomy pain. Clin J Pain 26(5): 381–85.	n=150	Non-WEIRD: Egypt
Andreae MH & Andreae DA (2013) Regional anaesthesia to prevent chronic pain after surgery: a Cochrane systematic review and meta-analysis. Br J Anaesth 111(5): 711–20.	thoracotomy (3 RCTs, n=250 breast cancer surgery (2 RCTs, n=89	Non-WEIRD: China n=212 Non-WEIRD: Turkey n=38 WEIRD: N,W,S Europe n=89
Batoz H, Verdonck O, Pellerin C et al (2009) The analgesic properties of scalp infiltrations with ropivacaine after intracranial tumoral resection. Anesth Analg 109(1): 240–44.	n=52	WEIRD: N,W,S Europe
Bischoff JM, Aasvang EK, Kehlet H et al (2012) Does nerve identification during open inguinal herniorrhaphy reduce the risk of nerve damage and persistent pain? Hernia 16(5): 573–77.	n=244	WEIRD: N,W,S Europe
Blumenthal S, Dullenkopf A, Rentsch K et al (2005) Continuous infusion of ropivacaine for pain relief after iliac crest bone grafting for shoulder surgery. Anesthesiology 102(2): 392–97.	n= 36	WEIRD: N,W,S Europe
Bouman EA, Theunissen M, Bons SA et al (2014) Reduced incidence of chronic postsurgical pain after epidural analgesia for	n=100	WEIRD: N,W,S Europe

abdominal surgery. Pain Pract 14(2): E76–84.		
Brandsborg B, Nikolajsen L, Hansen CT et al (2007) Risk factors for chronic pain after hysterectomy: a nationwide questionnaire and database study. Anesthesiology 106(5): 1003–12.	n=1135	WEIRD: N,W,S Europe
Breivik H, Collett B, Ventafridda V et al (2006) Survey of chronic pain in Europe: prevalence, impact on daily life, and treatment. Eur J Pain 10(4): 287–333.	n=46,394	WEIRD: N,W,S Europe n= Non-WEIRD: Israel n=2244 Non-Weird: Poland n=3812
Bruce J, Thornton AJ, Powell R et al (2014) Psychological, surgical, and sociodemographic predictors of pain outcomes after breast cancer surgery: a population-based cohort study. Pain 155(2): 232–43.	n=362	WEIRD: N,W,S Europe
Chan MT, Wan AC, Gin T et al (2011) Chronic postsurgical pain after nitrous oxide anesthesia. Pain 152(11): 2514–20.	n= 640	Non-WEIRD: Hong Kong
Chaparro LE, Smith SA, Moore RA et al (2013) Pharmacotherapy for the prevention of chronic pain after surgery in adults. Cochrane Database Syst Rev 7	Data used previously	Data used previously
De Kock M, Lavand'homme P, Waterloos H. 'Balanced analgesia' in the perioperative period: is there a place for ketamine? Pain 2001;92(3):373-80.	n=100	WEIRD: N,W,S Europe

Katz J, Schmid R, Snijdelaar DG, Coderre TJ, McCartney CJ, Wowk A. Pre-emptive analgesia using intravenous fentanyl plus low-dose ketamine for radical prostatectomy under general anesthesia does not produce short-term or long-term reductions in pain or analgesic use. Pain 2004;110(3):707-18.	n=143	WEIRD: US
Hayes C, Armstrong-Brown A, Burstal R. Perioperative intravenous ketamine infusion for the prevention of persistent post-amputation pain: a randomized, controlled trial. Anaesthesia and Intensive Care 2004;32(3):330-8.	n=45	WEIRD: Australia
Malek J, Kurzova A, Bendova M, Noskova P, Strunova M, Vedral T. The prospective study on the effect of a preemptive long-term postoperative administration of a low-dose ketamine on the incidence of chronic post-mastectomy pain. Anesteziologie a Intenzivni Medicina 2006;17(1):34-37.	n=100	WEIRD: N,W,S Europe
Perrin SB, Purcell AN. Intraoperative ketamine may influence persistent pain following knee arthroplasty under combined general and spinal anaesthesia: a pilot study. Anaesthesia and Intensive Care 2009;37(2):248-53	n=12	WEIRD: Australia
Remerand F, Le Tendre C, Baud A, Couvret C, Pourrat X, Favard L, et al. The early and delayed analgesic effects of ketamine after total hip arthroplasty: a prospective, randomized, controlled, double-blind study. Anesthesia and Analgesia 2009;109(6):1963-71.	n=154	WEIRD: N,W,S Europe

Sveticic G, Farzanegan F, Zmoos P, Zmoos S, Eichenberger U, Curatolo M. Is the combination of morphine with ketamine better than morphine alone for postoperative intravenous patient-controlled analgesia? Anesthesia and Analgesia 2008;106(1):287-93	n=352	WEIRD: N,W,S Europe
Suzuki M, Haraguti S, Sugimoto K, Kikutani T, Shimada Y, Sakamoto A. Low-dose intravenous ketamine potentiates epidural analgesia after thoracotomy. Anesthesiology 2006;105(1):111-9.	n=49	Non-WEIRD: Japan
Clarke H, Bonin RP, Orser BA et al (2012) The prevention of chronic postsurgical pain using gabapentin and pregabalin: a combined systematic review and meta-analysis. Anesth Analg 115(2): 428–42.	Flagged publication bias “now documented evidence of a pregabalin publication bias”	Flagged publication bias “now documented evidence of a pregabalin publication bias”
Crombie IK, Davies HT & Macrae WA (1998) Cut and thrust: antecedent surgery and trauma among patients attending a chronic pain clinic. Pain 76(1-2): 167–71.	n=5130	WEIRD: N,W,S Europe
Duale C, Ouchchane L, Schoeffler P et al (2014) Neuropathic aspects of persistent postsurgical pain: a French multicenter survey with a 6-month prospective follow-up. J Pain 15(1): 24 e1–e20.	n=2,397	WEIRD: N,W,S Europe
Gehling 2003 Level III-2 SR, 9 studies, n=836)	Article in German, not able to access original	Article in German, not able to access original
Grigoras A, Lee P, Sattar F et al (2012) Perioperative intravenous lidocaine decreases the incidence of persistent pain after breast surgery. Clin J Pain 28(7): 567–72.	n=36	WEIRD: N,W,S Europe

Hanley MA, Jensen MP, Smith DG et al (2007) Preamputation pain and acute pain predict chronic pain after lower extremity amputation. J Pain 8(2): 102–09.	n=57	WEIRD: US
Hinrichs-Rocker A, Schulz K, Jarvinen I et al (2009) Psychosocial predictors and correlates for chronic post-surgical pain (CPSP) - a systematic review. Eur J Pain 13(7): 719–30.	n≈25,000	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Japan n=85 Non-WEIRD: Israel n=110
Johansen AA, Romundstad LL, Nielsen CSC et al (2012) Persistent postsurgical pain in a general population: prevalence and predictors in the Tromsø study. Pain 153(7): 1390–96.	n=2,043	WEIRD: N,W,S Europe
Johansen A, Schirmer H, Stubhaug A et al (2014) Persistent post-surgical pain and experimental pain sensitivity in the Tromso study: comorbid pain matters. Pain 155(2): 341–48.	n=3352	WEIRD: N,W,S Europe
Karanikolas M, Aretha D, Tsolakis I et al (2011) Optimized perioperative analgesia reduces chronic phantom limb pain intensity, prevalence, and frequency: a prospective, randomized, clinical trial. Anesthesiology 114(5): 1144–54.	n=65	WEIRD: N,W,S Europe
Katz J, Jackson M, Kavanagh BP et al (1996) Acute pain after thoracic surgery predicts long-term post-thoracotomy pain. Clin J Pain 12(1): 50–55.	n= 23	WEIRD: US
Kolesnikov Y, Gabovits B, Levin A et al (2013) Chronic pain after lower abdominal surgery: do catechol-O-methyl transferase/opioid receptor mu-1 polymorphisms contribute? Mol Pain 9: 19.	n=102	WEIRD: US

Lavand'homme P, De Kock M & Waterloos H (2005) Intraoperative epidural analgesia combined with ketamine provides effective preventive analgesia in patients undergoing major digestive surgery. Anesthesiology 103(4): 813–20.	n=85	WEIRD: N,W,S Europe
Malekpour F, Mirhashemi SH, Hajinasrolah E et al (2008) Ilioinguinal nerve excision in open mesh repair of inguinal hernia results of a randomized clinical trial: simple solution for a difficult problem? Am J Surg 195(6): 735–40.	n=100	Non-WEIRD: Iran
Martinez V, Ben Ammar S, Judet T et al (2012) Risk factors predictive of chronic postsurgical neuropathic pain: the value of the iliac crest bone harvest model. Pain 153(7): 1478–83.	n=82	WEIRD: N,W,S Europe
Masselin-Dubois A, Attal N, Fletcher D et al (2013) Are psychological predictors of chronic postsurgical pain dependent on the surgical model? A comparison of total knee arthroplasty and breast surgery for cancer. J Pain 14(8): 854–64.	n=189	WEIRD: N,W,S Europe
McNicol ED, Schumann R & Haroutounian S (2014) A systematic review and meta-analysis of ketamine for the prevention of persistent post-surgical pain. Acta Anaesthesiol Scand 58(10): 1199–213.	Duplication of studies already included	Duplication of studies already included
Nackley AG, Tan KS, Fecho K et al (2007) Catechol-O-methyltransferase inhibition increases pain sensitivity through activation of both beta2- and beta3-adrenergic receptors. Pain 128(3): 199–208.	Animal study - not documented as such in the scientific document	Animal study - not documented as such in the scientific document

Nikolajsen L, Sorensen HC, Jensen TS et al (2004) Chronic pain following Caesarean section. Acta Anaesthesiol Scand 48(1): 111–16.	n=220	WEIRD: N,W,S Europe
Nikolajsen L, Brandsborg B, Lucht U et al (2006) Chronic pain following total hip arthroplasty: a nationwide questionnaire study. Acta Anaesthesiol Scand 50(4): 495–500.	n=1152	WEIRD: N,W,S Europe
Page MG, Campbell F, Isaac L et al (2013a) Parental risk factors for the development of pediatric acute and chronic postsurgical pain: a longitudinal study. J Pain Res 6: 727–41.	n= 59	WEIRD: US
Page MG, Stinson J, Campbell F et al (2013b) Identification of pain-related psychological risk factors for the development and maintenance of pediatric chronic postsurgical pain. J Pain Res 6: 167–80.	n=59	WEIRD: US
Simanski CJ, Althaus A, Hoederath S et al (2014) Incidence of Chronic Postsurgical Pain (CPSP) after General Surgery. Pain Med 15(7): 1222–29.	n=911	WEIRD: N,W,S Europe
Sipila R, Estlander AM, Tasmuth T et al (2012) Development of a screening instrument for risk factors of persistent pain after breast cancer surgery. Br J Cancer 107(9): 1459–66.	n=489	WEIRD: N,W,S Europe
Smeds S, Lofstrom L & Eriksson O (2010) Influence of nerve identification and the resection of nerves ‘at risk’ on postoperative pain in open inguinal hernia repair. Hernia 14(3): 265–70.	n=525	WEIRD: N,W,S Europe

Stubhaug A, Breivik H, Eide PK et al (1997) Mapping of punctuate hyperalgesia around a surgical incision demonstrates that ketamine is a powerful suppressor of central sensitization to pain following surgery. Acta Anaesthesiol Scand 41(9): 1124–32.	n=20	WEIRD: N,W,S Europe
Theunissen M, Peters ML, Bruce J et al (2012) Preoperative anxiety and catastrophizing: a systematic review and meta-analysis of the association with chronic postsurgical pain. Clin J Pain 28(9): 819–41.	Data included previously	Data included previously
VanDenKerkhof EG, Hopman WM, Goldstein DH et al (2012) Impact of perioperative pain intensity, pain qualities, and opioid use on chronic pain after surgery: a prospective cohort study. Reg Anesth Pain Med 37(1): 19–27.	n=433	WEIRD: US
Warrier S, Hwang S, Koh CE et al (2014) Preservation or division of the intercostobrachial nerve in axillary dissection for breast cancer: meta-analysis of randomised controlled trials. Breast 23(4): 310–16.	n=309	Non-WEIRD: Brazil n=85 WEIRD: N,W,S Europe
Werner MU, Mjöbo HN, Nielsen PR et al (2010) Prediction of postoperative pain: a systematic review of predictive experimental pain studies. Anesthesiology 112(6): 1494–502.	n=962	Non-WEIRD: Taiwan n=40 Non-WEIRD: Israel n=249 Non-WEIRD: South Africa n=120
Wildgaard K, Ringsted TK, Hansen HJ et al (2012) Quantitative sensory testing of persistent pain after video-assisted thoracic surgery lobectomy. Br J Anaesth 108(1): 126–33.	n=48	WEIRD: N,W,S Europe

Wylde V, Hewlett S, Learmonth ID et al (2011) Persistent pain after joint replacement: prevalence, sensory qualities, and postoperative determinants. Pain 152(3): 566–72.	n=1294	WEIRD: N,W,S Europe
Wylde V, Palmer S, Learmonth ID et al (2013) The association between pre-operative pain sensitisation and chronic pain after knee replacement: an exploratory study. Osteoarthritis Cartilage 21(9): 1253–56.	n=51	WEIRD: N,W,S Europe
Wylde V, MacKichan F, Bruce J et al (2014) Assessment of chronic post-surgical pain after knee replacement: Development of a core outcome set. Eur J Pain 19(5): 611–20.	n=95 "international panel" = UK, Canada & Australia	WEIRD: N,W,S Europe + US
Yarnitsky D, Crispel Y, Eisenberg E et al (2008) Prediction of chronic post-operative pain: pre-operative DNIC testing identifies patients at risk. Pain 138(1): 22–28.	n=62	Non-WEIRD: Israel
	Total n=97986	Non-WEIRD n=7934 WEIRD: n=90052

Table 6 Domain: Adverse effects of pain (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Fant F, Tina E, Sandblom D et al (2013) Thoracic epidural analgesia inhibits the neuro-hormonal but not the acute inflammatory stress response after radical retropubic prostatectomy. Br J Anaesth 110(5): 747–57.	n=26	WEIRD: N,W,S Europe

Table 6 Domain: Adverse effects of pain (SASA Guidelines 2015)

Jenewein J, Moergeli H, Wittmann L et al (2009) Development of chronic pain following severe accidental injury. Results of a 3-year follow-up study. J Psychosom Res 66(2): 119–26.	n=90	WEIRD: N,W,S Europe
Koenig J, Jarczok MN, Ellis RJ et al (2013) Heart rate variability and experimentally induced pain in healthy adults: A systematic review. Eur J Pain: 301–14.	n=647	WEIRD: N,W,S Europe WEIRD: US, North America WEIRD: Australia Non-WEIRD: Israel n=55
Kuo CP, Jao SW, Chen KM et al (2006) Comparison of the effects of thoracic epidural analgesia and i.v. infusion with lidocaine on cytokine response, postoperative pain and bowel function in patients undergoing colonic surgery. Br J Anaesth 97(5)	n=60	Non-WEIRD: Taiwan
Monk TG, Weldon BC, Garvan CW et al (2008) Predictors of cognitive dysfunction after major noncardiac surgery. Anesthesiology 108(1): 18–30.	n=1064	WEIRD: US
Moselli NM, Baricocchi E, Ribero D et al (2011) Intraoperative epidural analgesia prevents the early proinflammatory response to surgical trauma. Results from a prospective randomized clinical trial of intraoperative epidural versus general analgesia. Ann Surg Oncol 18(10): 2722–31.	n=35	WEIRD: N,W,S Europe

Table 6 Domain: Adverse effects of pain (SASA Guidelines 2015)

Popping DM, Elia N, Van Aken HK et al (2014) Impact of epidural analgesia on mortality and morbidity after surgery: systematic review and meta-analysis of randomized controlled trials. Ann Surg 259(6): 1056–67.	n=9044	Non-WEIRD: Lithuania n=208 Non-WEIRD: China n=92 Non-WEIRD: Tunisia n=66 Non-WEIRD: Czech Republic n=32 Non-WEIRD: Russia n=93 WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Sun Y, Li T, Wang N et al (2012) Perioperative systemic lidocaine for postoperative analgesia and recovery after abdominal surgery: a meta-analysis of randomized controlled trials. Dis Colon Rectum 55(11): 1183–94.	n=1108	Non-WEIRD: Nepal n=60 Non-WEIRD: Saudi Arabia n=120 Non-WEIRD: Mexico: n=30 Non-WEIRD: Israel: n=65 Non-WEIRD: Taiwan: n=50 Non-WEIRD: China n=50
Vigneault L, Turgeon AF, Cote D et al (2011) Perioperative intravenous lidocaine infusion for postoperative pain control: a meta-analysis of randomized controlled trials. Can J Anaesth 58(1): 22–37.	Data included previously	Data included previously
Williamson OD, Epi GD, Gabbe BJ et al (2009) Predictors of moderate or severe pain 6 months after orthopaedic injury: a prospective cohort study. J Orthop Trauma 23(2): 139–44.	n=1290	WEIRD: Australia
	Total n=13364(100%)	WEIRD: n=12383 (92.1%) Non-WEIRD n=981

Table 7 Domain: Opioids (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Arcioni R, della Rocca M, Romano S et al (2002) Ondansetron inhibits the analgesic effects of tramadol: a possible 5-HT(3) spinal receptor involvement in acute pain in humans. Anesth Analg 94(6): 1553–57.	n=59	WEIRD: N,W,S Europe
Binning AR, Przesmycki K, Sowinski P et al (2011) A randomised controlled trial on the efficacy and side-effect profile (nausea/vomiting/sedation) of morphine-6-glucuronide versus morphine for post-operative pain relief after major abdominal surgery. Eur J Pain 15(4): 402–08.	Recruited patients from WEIRD and non-WEIRD (Poland and Czech Republic) but study doesn't quantify amount from each. Plus industry sponsored, with study investigators subsequently employed by the sponsor	Recruited patients from WEIRD and non-WEIRD (Poland and Czech Republic) but study doesn't quantify amount from each. Plus industry sponsored, with study investigators subsequently employed by the sponsor
Brouquet A, Cudennec T, Benoist S et al (2010) Impaired mobility, ASA status and administration of tramadol are risk factors for postoperative delirium in patients aged 75 years or more after major abdominal surgery. Ann Surg 251(4): 759–65.	n=118	WEIRD: N,W,S Europe
Cann C, Curran J, Milner T et al (2002) Unwanted effects of morphine-6-glucoronide and morphine. Anaesthesia 57(12): 1200–03.	n=136	WEIRD: N,W,S Europe
Chang SH, Maney KM, Phillips JP et al (2010) A comparison of the respiratory effects of oxycodone versus morphine: a randomised, double-blind, placebo-controlled investigation. Anaesthesia 65(10): 1007–12.	n=54	WEIRD: N,W,S Europe

Table 7 Domain: Opioids (SASA Guidelines 2015)

De Witte JL, Schoenmaekers B, Sessler DI et al (2001) The analgesic efficacy of tramadol is impaired by concurrent administration of ondansetron. Anesth Analg 92(5): 1319–21.	n=40	WEIRD: US
Ezri T, Lurie S, Stein A et al (2002) Postoperative nausea and vomiting: comparison of the effect of postoperative meperidine or morphine in gynecologic surgery patients. J Clin Anesth 14(4): 262–66.	n=200	Non-WEIRD: Israel:
Fong HK, Sands LP & Leung JM (2006) The role of postoperative analgesia in delirium and cognitive decline in elderly patients: a systematic review. Anesth Analg 102(4): 1255–66.	n=877	WEIRD: US WEIRD: N,W,S Europe
Hammoud HA, Aymard G, Lechat P et al (2011) Relationships between plasma concentrations of morphine, morphine-3-glucuronide, morphine-6-glucuronide, and intravenous morphine titration outcomes in the postoperative period. Fundam Clin Pharmacol 25(4): 518–27.	n=214	WEIRD: N,W,S Europe
Hanna MH, Elliott KM & Fung M (2005) Randomized, double-blind study of the analgesic efficacy of morphine-6-glucuronide versus morphine sulfate for postoperative pain in major surgery. Anesthesiology 102(4): 815–21.	n=100	WEIRD: N,W,S Europe
Hassanian-Moghaddam H, Farajidana H, Sarjami S et al (2013) Tramadol-induced apnea. Am J Emerg Med 31(1): 26–31.	n=525	Non-WEIRD: Iran

Table 7 Domain: Opioids (SASA Guidelines 2015)

Jasani NB, O'Conner RE & Bouzoukis JK (1994) Comparison of hydromorphone and meperidine for ureteral colic. Acad Emerg Med 1(6): 539–43.	n=73	WEIRD: US
Kirchheiner J, Schmidt H, Tzvetkov M et al (2007) Pharmacokinetics of codeine and its metabolite morphine in ultra-rapid metabolizers due to CYP2D6 duplication. Pharmacogenomics J 7(4): 257–65.	n=26 (white males)	WEIRD: N,W,S Europe
Klepstad P, Dale O, Kaasa S et al (2003) Influences on serum concentrations of morphine, M6G and M3G during routine clinical drug monitoring: a prospective survey in 300 adult cancer patients. Acta Anaesthesiol Scand 47(6): 725–31.	n=300	WEIRD: N,W,S Europe
Lim AW & Schug SA (2001) Tramadol versus morphine as oral step-down analgesia after postoperative epidural analgesia. Reg Anesth Pain Med 26: S133.	Article no longer available? Author is editor of guideline?	Article no longer available? Author is editor of guideline?
Lotsch J, Rohrbacher M, Schmidt H et al (2009) Can extremely low or high morphine formation from codeine be predicted prior to therapy initiation? Pain 144(1-2): 119–24.	n=57 (white)	WEIRD: N,W,S Europe
Madadi P, Ross CJ, Hayden MR et al (2009) Pharmacogenetics of neonatal opioid toxicity following maternal use of codeine during breastfeeding: a case-control study. Clin Pharmacol Ther 85(1): 31–35.	n=72	WEIRD: US

Table 7 Domain: Opioids (SASA Guidelines 2015)

Marcou TA, Marque S, Mazoit JX et al (2005) The median effective dose of tramadol and morphine for postoperative patients: a study of interactions. Anesth Analg 100(2): 469–74.	n=90	WEIRD: N,W,S Europe
O'Connor A, Schug SA & Cardwell H (2000) A comparison of the efficacy and safety of morphine and pethidine as analgesia for suspected renal colic in the emergency setting. J Accid Emerg Med 17(4): 261–64.	n=103	WEIRD: Australia
Romberg R, van Dorp E, Hollander J et al (2007) A randomized, double-blind, placebo-controlled pilot study of IV morphine-6-glucuronide for postoperative pain relief after knee replacement surgery. Clin J Pain 23(3): 197–203.	n=41	WEIRD: N,W,S Europe
Shadnia S, Brent J, Mousavi-Fatemi K et al (2012) Recurrent seizures in tramadol intoxication: implications for therapy based on 100 patients. Basic Clin Pharmacol Toxicol 111(2): 133–36.	n=100	Non-WEIRD: Iran (use of tramadol for erectile dysfunction)
Silverman ME, Shih RD & Allegra J (2004) Morphine induces less nausea than meperidine when administered parenterally. J Emerg Med 27(3): 241–43.	n=193	WEIRD: US

Table 7 Domain: Opioids (SASA Guidelines 2015)

Simopoulos TT, Smith HS, Peeters-Asdourian C et al (2002) Use of meperidine in patient-controlled analgesia and the development of a normeperidine toxic reaction. Arch Surg 137(1): 84–88.	n=355	WEIRD: US
Smith TW, Binning AR & Dahan A (2009) Efficacy and safety of morphine-6-glucuronide (M6G) for postoperative pain relief: a randomized, double-blind study. Eur J Pain 13(3): 293–99.	n=201	WEIRD: N,W,S Europe
Stamer UM, Lehnen K, Hothker F et al (2003) Impact of CYP2D6 genotype on postoperative tramadol analgesia. Pain 105(1-2): 231–38.	n=271	WEIRD: N,W,S Europe
Tarkkila P, Tuominen M & Lindgren L (1998) Comparison of respiratory effects of tramadol and pethidine. Eur J Anaesthesiol 15(1): 64–68.	n=36	WEIRD: N,W,S Europe
Thevenin A, Beloeil H, Blanie A et al (2008) The limited efficacy of tramadol in postoperative patients: a study of ED80 using the continual reassessment method. Anesth Analg 106(2): 622–27.	n=24	WEIRD: N,W,S Europe
Wilder-Smith CH, Hill L, Wilkins J et al (1999b) Effects of morphine and tramadol on somatic and visceral sensory function and gastrointestinal motility after abdominal surgery. Anesthesiology 91(3): 639–47.	n=50 industry sponsored	non-WEIRD: South Africa

Table 7 Domain: Opioids (SASA Guidelines 2015)

Woodhouse A, Ward ME & Mather LE (1999) Intra-subject variability in post-operative patient-controlled analgesia (PCA): is the patient equally satisfied with morphine, pethidine and fentanyl? Pain 80(3): 545–53.	n=82	WEIRD: Australia
Yassen A, Olofsen E, Romberg R et al (2006) Mechanism-based pharmacokinetic-pharmacodynamic modeling of the antinociceptive effect of buprenorphine in healthy volunteers. Anesthesiology 104(6): 1232–42.	n=34	WEIRD: N,W,S Europe
Yee MM, Josephson C, Hill CE et al (2013b) Cytochrome P450 2D6 polymorphisms and predicted opioid metabolism in African American children with sickle cell disease. J Pediatr Hematol Oncol 35(7): e301–05.	n=75 (African American)	WEIRD: US
Zwisler ST, Enggaard TP, Mikkelsen S et al (2010) Impact of the CYP2D6 genotype on post-operative intravenous oxycodone analgesia. Acta Anaesthesiol Scand 54(2): 232–40.	n=270	WEIRD: N,W,S Europe
	Total n=4776(100%)	Non-WEIRD: n=875 (18.3%)

Table 8 Domain: Local anaesthetics (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:

Table 8 Domain: Local anaesthetics (SASA Guidelines 2015)

Vigneault L, Turgeon AF, Cote D et al (2011) Perioperative intravenous lidocaine infusion for postoperative pain control: a meta-analysis of randomized controlled trials. Can J Anaesth 58(1): 22–37.	Data included previously	Data included previously
Sun Y, Li T, Wang N et al (2012) Perioperative systemic lidocaine for postoperative analgesia and recovery after abdominal surgery: a meta-analysis of randomized controlled trials. Dis Colon Rectum 55(11): 1183–94.	Data included previously	Data included previously
Barreveld A, Witte J, Chahal H et al (2013) Preventive analgesia by local anesthetics: the reduction of postoperative pain by peripheral nerve blocks and intravenous drugs. Anesth Analg 116(5): 1141–61.	Data included previously	Data included previously
Wasiak J, Mahar P, McGuinness SK et al (2012) Intravenous lidocaine for the treatment of background or procedural burn pain. Cochrane Database Syst Rev 6: CD005622.	n=45	WEIRD: Australia
Bell R, Montoya D, Shuaib A et al (1990) A comparative trial of three agents in the treatment of acute migraine headache. Ann Emerg Med 19(10): 1079–82.	n=90	WEIRD: US
Reutens DC, Fatovich DM, Stewart-Wynne EG et al (1991) Is intravenous lidocaine clinically effective in acute migraine? Cephalalgia 11(6): 245–47.	n=25	WEIRD: Australia

Table 8 Domain: Local anaesthetics (SASA Guidelines 2015)

Maizels M, Scott B, Cohen W et al (1996) Intranasal lidocaine for treatment of migraine: a randomized, double-blind, controlled trial. JAMA 276(4): 319–21.	n=81	WEIRD: US
Blanda M, Rench T, Gerson LW et al (2001) Intranasal lidocaine for the treatment of migraine headache: a randomized, controlled trial. Acad Emerg Med 8(4): 337–42.	n=49	WEIRD: US
Tremont-Lukats IW, Challapalli V, McNicol ED et al (2005) Systemic administration of local anesthetics to relieve neuropathic pain: a systematic review and meta-analysis. Anesth Analg 101(6): 1738–49.	n=706	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Japan: n=287 Non-WEIRD: Israel: n=30
Challapalli V, Tremont-Lukats IW, McNicol ED et al (2005) Systemic administration of local anesthetic agents to relieve neuropathic pain. Cochrane Database Syst Rev 4: CD003345.	Data included previously	Data included previously
Kalso E, Tramer MR, McQuay HJ et al (1998) Systemic local-anaesthetic-type drugs in chronic pain: a systematic review. Eur J Pain 2(1): 3–14.	Data included previously	Data included previously
Barrington MJ & Kluger R (2013) Ultrasound guidance reduces the risk of local anesthetic systemic toxicity following peripheral nerve blockade. Reg Anesth Pain Med 38(4): 289–97.	n=20021	WEIRD: Australia

Table 8 Domain: Local anaesthetics (SASA Guidelines 2015)

	Total n=21017(100%)	WEIRD: n=317 (1.5%)

Table 9 Domain: α2 agonists (SASA Guidelines 2015)		
Referenced Studies:	Population data set:	Category:
Agarwal D, Chopra M, Mohta M et al (2014) Clonidine as an adjuvant to hyperbaric bupivacaine for spinal anesthesia in elderly patients undergoing lower limb orthopedic surgeries. Saudi J Anaesth 8(2): 209–14.	n=60	Non-WEIRD: India
Baptista JF, Gomez RS, Paulo DN et al (2014) Epidural anesthesia with ropivacaine with or without clonidine and postoperative pain in hemorrhoidectomies. Acta Cir Bras 29(3): 201–08.	n=80	Non-WEIRD: Brazil
Blaudszun G, Lysakowski C, Elia N et al (2012) Effect of perioperative systemic alpha2 agonists on postoperative morphine consumption and pain intensity: systematic review and meta-analysis of randomized controlled trials. Anesthesiology 116(6): 1312–22.	n=1792	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Turkey n=304 Non-WEIRD: Egypt n=80 Non-WEIRD: Taiwan n=240 Non-WEIRD: Iran n=120 Non-WEIRD: Brazil n=126
Chopra P & Talwar V (2014) Low dose intrathecal clonidine and fentanyl added to hyperbaric bupivacaine prolongs analgesia in gynecological surgery. J Anaesthesiol Clin Pharmacol 30(2): 233–37.	n=75	Non-WEIRD: India
Elia N, Culebras X, Mazza C et al (2008) Clonidine as an adjuvant to intrathecal local anesthetics for surgery: systematic review of randomized trials. Reg Anesth Pain Med 33(2): 159–67.	n=1445	Not able to access the supplementary data which includes the data set sources: “file not found”

Table 9 Domain: α2 agonists (SASA Guidelines 2015)		
Engelman E & Marsala C (2013) Efficacy of adding clonidine to intrathecal morphine in acute postoperative pain: meta-	n=503	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Farmery AD & Wilson-MacDonald J (2009) The analgesic effect of epidural clonidine after spinal surgery: a randomized placebo-controlled trial. Anesth Analg 108(2): 631–34.	n=65	WEIRD: N,W,S Europe
Ginosar Y, Riley ET & Angst MS (2013) Analgesic and sympatholytic effects of low-dose intrathecal clonidine compared with bupivacaine: a dose-response study in female volunteers. Br J Anaesth 111(2): 256–63.	n=11	WEIRD: US
Huang YS, Lin LC, Huh BK et al (2007) Epidural clonidine for postoperative pain after total knee arthroplasty: a dose-response study. Anesth Analg 104(5): 1230–35.	n=80	Non-WEIRD: Taiwan
Kaya FN, Yavascaoglu B, Turker G et al (2010) Intravenous dexmedetomidine, but not midazolam, prolongs bupivacaine spinal anesthesia. Can J Anaesth 57(1): 39–45.	n=75	Non-WEIRD: Turkey
Khezri MB, Rezaei M, Delkhosh Reihany M et al (2014) Comparison of postoperative analgesic effect of intrathecal clonidine and fentanyl added to bupivacaine in patients undergoing cesarean section: a prospective randomized double-blind study. Pain Res Treat 2014: 513628.	n=90	Non-WEIRD: Iran

Table 9 Domain: α2 agonists (SASA Guidelines 2015)		
Lavand'homme PM, Roelants F, Waterloos H et al (2008b) An evaluation of the postoperative antihyperalgesic and analgesic effects of intrathecal clonidine administered during elective cesarean delivery. Anesth Analg 107(3): 948–55.	n=96	WEIRD: N,W,S Europe
Sachan P, Kumar N & Sharma J (2014) Intrathecal clonidine with hyperbaric bupivacaine administered as a mixture and sequentially in caesarean section: A randomised controlled study. Indian J Anaesth 58(3): 287–92.	n=60	Non-WEIRD: India
Thakur A, Bhardwaj M, Kaur K et al (2013) Intrathecal clonidine as an adjuvant to hyperbaric bupivacaine in patients undergoing inguinal herniorrhaphy: A randomized double-blinded study. J Anaesthesiol Clin Pharmacol 29(1): 66–70.	n=75	Non-WEIRD: India
	Total n=3062(100%)	WEIRD: n=1390 (45.4%)

Table 10 Domain: N-methyl-D-aspartate receptor antagonists (SASA Guidelines 2015)		
Referenced Studies:	Population data set:	Category:
Chau-In W, Sukmuan B, Ngamsangsirisapt K et al (2007) Efficacy of pre- and postoperative oral dextromethorphan for reduction of intra- and 24-hour postoperative morphine consumption for	n=100	Non-WEIRD: Thailand

Table 10 Domain: N-methyl-D-aspartate receptor antagonists (SASA Guidelines 2015)		
transabdominal hysterectomy. Pain Med 8(5): 462–67.		
Chong C, Schug SA, Page-Sharp M et al (2009) Development of a sublingual/oral formulation of ketamine for use in neuropathic pain: preliminary findings from a three-way randomized, crossover study. Clin Drug Investig 29(5): 317–24.	n=6	WEIRD: Australia
Ding X, Jin S, Niu X et al (2014) Morphine with adjuvant ketamine versus higher dose of morphine alone for acute pain: a meta-analysis. Int J Clin Exp Med 7(9): 2504–10.	n=492	Non-WEIRD: Israel n=441 Non-WEIRD: Puerto Rico n=11 Non-WEIRD: Taiwan n=40
Duedahl TH, Romsing J, Moiniche S et al (2006) A qualitative systematic review of peri-operative dextromethorphan in post-operative pain. Acta Anaesthesiol Scand 50(1): 1–13.	n=1629	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Taiwan n=621 Non-WEIRD: Egypt n=60 Non-WEIRD: Japan n=36 Non-WEIRD: Israel n=313

Table 10 Domain: N-methyl-D-aspartate receptor antagonists (SASA Guidelines 2015)		
Laskowski K, Stirling A, McKay WP et al (2011) A systematic review of intravenous ketamine for postoperative analgesia. Can J Anaesth 58(10): 911–23.	n=4701	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Turkey n=500 Non-WEIRD: Kuwait n=40 Non-WEIRD: Croatia n=90 Non-WEIRD: Israel n=66 Non-WEIRD: Iran n=1855 Non-WEIRD: Egypt (not able to access) Non-WEIRD: China n=230 Non-WEIRD: Jordan n=30 Non-WEIRD: Tunisia n=128 Non-WEIRD: Martinique n=40 Non-WEIRD: Japan n=202
Mahmoodzadeh H, Movafegh A & Beigi NM (2010) Preoperative oral dextromethorphan does not reduce pain or morphine consumption after open cholecystectomy. Middle East J Anaesthesiol 20(4): 559–63.	n=72	Non-WEIRD: Iran
Okamoto Y, Tsuneto S, Tanimukai H et al (2013) Can gradual dose titration of ketamine for management of neuropathic pain prevent psychotomimetic effects in patients with advanced cancer? Am J Hosp Palliat Care 30(5): 450–54.	n=46	Non-WEIRD: Japan
Rolan P, Lim S, Sunderland V et al (2014) The absolute bioavailability of racemic ketamine from a novel sublingual formulation. Br J Clin Pharmacol 77(6): 1011–16.	n=8	WEIRD: Australia

Table 10 Domain: N-methyl-D-aspartate receptor antagonists (SASA Guidelines 2015)		
Yanagihara Y, Ohtani M, Kariya S et al (2003) Plasma concentration profiles of ketamine and norketamine after administration of various ketamine preparations to healthy Japanese volunteers. Biopharm Drug Dispos 24(1): 37–43.	n=3	Non-WEIRD: Japan
	Total n=7057(100%)	Non-WEIRD: n=4924(70%)

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Referenced Studies:	Population data set:	Category:
Ali S, Chambers AL, Johnson DW et al (2014) Paediatric pain management practice and policies across Alberta emergency departments. Paediatr Child Health 19(4): 190–94.	n=72	WEIRD: US
Allegaert K, Vanhole C, de Hoon J et al (2005c) Nonselective cyclo-oxygenase inhibitors and glomerular filtration rate in preterm neonates. Pediatr Nephrol 20(11): 1557–61.	n=143	WEIRD: N,W,S Europe
Allegaert K, van Schaik RHN, Vermeersch S et al (2008) Postmenstrual age and CYP2D6 polymorphisms determine tramadol o-demethylation in critically ill neonates and infants. Pediatr Res 63(6): 674–79.	n=29	WEIRD: N,W,S Europe
Anand KJ, Anderson BJ, Holford NH et al (2008) Morphine pharmacokinetics and pharmacodynamics in preterm and term neonates: secondary results from the NEOPAIN trial. Br J Anaesth 101(5): 680–89.	n=1,773	WEIRD: N,W,S Europe WEIRD: US
Anand KJ, Clark AE, Willson DF et al (2013) Opioid analgesia in mechanically ventilated children: results from the multicenter Measuring Opioid Tolerance Induced by Fentanyl study. Pediatr Crit Care Med 14(1): 27–36.	n=419	WEIRD: US

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Anderson BJ, van Lingen RA, Hansen TG et al (2002) Acetaminophen developmental pharmacokinetics in premature neonates and infants: a pooled population analysis. Anesthesiology 96(6): 1336–45.	n=283	WEIRD: Australia WEIRD: N,W,S Europe WEIRD: US
Antila H, Manner T, Kuurila K et al (2006) Ketoprofen and tramadol for analgesia during early recovery after tonsillectomy in children. Paediatr Anaesth 16(5): 548–53.	n=45	WEIRD: N,W,S Europe
Bazin V, Bollot J, Asehnoune K et al (2010) Effects of perioperative intravenous low dose of ketamine on postoperative analgesia in children. Eur J Anaesthesiol 27(1): 47–52.	n=37	WEIRD: N,W,S Europe
Bellis JR, Pirmohamed M, Nunn AJ et al (2014) Dexamethasone and haemorrhage risk in paediatric tonsillectomy: a systematic review and meta-analysis. Br J Anaesth 113(1): 23–42.	n=1,693	Non-WEIRD: Kuwait: n=80 WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: India: n=140 Non-WEIRD: Bahrain: n=120 Non-WEIRD: Turkey: n=62
Biran V, Gourrier E, Cimerman P et al (2011) Analgesic effects of EMLA cream and oral sucrose during venipuncture in preterm infants. Pediatrics 128(1): e63–70.	n=76	WEIRD: N,W,S Europe

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Borland ML, Bergesio R, Pascoe EM et al (2005) Intranasal fentanyl is an equivalent analgesic to oral morphine in paediatric burns patients for dressing changes: a randomised double blind crossover study. Burns 31(7): 831–37.	n=28	WEIRD: Australia
Bouwmeester NJ, van den Anker JN, Hop WC et al (2003b) Age- and therapy-related effects on morphine requirements and plasma concentrations of morphine and its metabolites in postoperative infants. Br J Anaesth 90(5): 642–52.	n=68	WEIRD: N,W,S Europe
Brady-Fryer B, Wiebe N & Lander JA (2004) Pain relief for neonatal circumcision. Cochrane Database Syst Rev 4: CD004217.	n=1,984	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Bressolle F, Rochette A, Khier S et al (2009) Population pharmacokinetics of the two enantiomers of tramadol and O-demethyl tramadol after surgery in children. Br J Anaesth 102(3): 390–99.	n=25	WEIRD: N,W,S Europe
Brunette KE, Anderson BJ, Thomas J et al (2011) Exploring the pharmacokinetics of oral ketamine in children undergoing burns procedures. Paediatr Anaesth 21(6): 653–62.	n=20	WEIRD: Australia
Ceelie I, de Wildt SN, van Dijk M et al (2013) Effect of intravenous paracetamol on postoperative morphine requirements in neonates and infants undergoing major	n=71	WEIRD: N,W,S Europe

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
noncardiac surgery: a randomized controlled trial. JAMA 309(2): 149–54.		
Cha MH, Eom JH, Lee YS et al (2012) Beneficial effects of adding ketamine to intravenous patient-controlled analgesia with fentanyl after the Nuss procedure in pediatric patients. Yonsei Med J 53(2): 427–32.	n=60	Non-WEIRD: South Korea: n=60
Chan DK & Parikh SR (2014) Perioperative ketorolac increases post-tonsillectomy hemorrhage in adults but not children. Laryngoscope 124(8): 1789–93.	n=1357	Non-WEIRD: Israel: n=57 WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Cignacco EL, Sellam G, Stoffel L et al (2012) Oral sucrose and "facilitated tucking" for repeated pain relief in preterms: a randomized controlled trial. Pediatrics 129(2): 299–308.	n=71	WEIRD: N,W,S Europe
Cyna AM & Middleton P (2008) Caudal epidural block versus other methods of postoperative pain relief for circumcision in boys. Cochrane Database Syst Rev 4: CD003005.	n=721	Non-WEIRD: Chile: n=40 Non-WEIRD: Hong Kong: n=185 Non-WEIRD: Israel: n=100 WEIRD: N,W,S Europe WEIRD: US
de Vos G, Shankar V, Nazari R et al (2012) Fear of repeated injections in children younger than 4 years receiving subcutaneous allergy immunotherapy. Ann Allergy Asthma Immunol 109(6): 465–69	n=18	WEIRD: US

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Ecoffey C, Lacroix F, Giaufre E et al (2010) Epidemiology and morbidity of regional anesthesia in children: a follow-up one-year prospective survey of the French-Language Society of Paediatric Anaesthesiologists (ADARPEF). Paediatr Anaesth 20(12): 1061	n=135,744	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Tunisia: n=unspecified (one hospital vs 40 from WEIRD)
Ellis J, Martelli B, Lamontagne C et al (2011) Improved practices for safe administration of intravenous bolus morphine in a pediatric setting. Pain Manag Nurs 12(3): 146–53.	n=270	WEIRD: US
Engelman E & Marsala C (2013) Efficacy of adding clonidine to intrathecal morphine in acute postoperative pain: meta-analysis. Br J Anaesth 110(1): 21–27.	Data included previously	Data included previously
Farion K, Osmond MH, Hartling L et al (2002) Tissue adhesives for traumatic lacerations in children and adults. Cochrane Database Syst Rev 3: CD003326.	n=1,327	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Turkey: n=52
Hamunen K & Kontinen V (2005) Systematic review on analgesics given for pain following tonsillectomy in children. Pain 117(1-2): 40–50.	n=2309	WEIRD: Australia WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Turkey n=85
Hannam JA, Anderson BJ, Mahadevan M et al (2014) Postoperative analgesia using diclofenac and acetaminophen in children. Paediatr Anaesth 24(9): 953–61.	n=151	WEIRD: Australia

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Harman S, Zemek R, Duncan MJ et al (2013) Efficacy of pain control with topical lidocaine-epinephrine-tetracaine during laceration repair with tissue adhesive in children: a randomized controlled trial. CMAJ 185(13): E629–34.	n=221,	WEIRD: US
He XY, Cao JP, Shi XY et al (2013) Dexmedetomidine versus morphine or fentanyl in the management of children after tonsillectomy and adenoidectomy: a meta-analysis of randomized controlled trials. Ann Otol Rhinol Laryngol 122(2): 114–20.	n=283	Non-WEIRD: Turkey n=90 Non-WEIRD: China n=60 WEIRD: US WEIRD: N,W,S Europe
Herd D & Anderson BJ (2007a) Ketamine disposition in children presenting for procedural sedation and analgesia in a children's emergency department. Paediatr Anaesth 17(7): 622–29. Herd DW, Anderson BJ & Holford NH (2007b) Modeling the norketamine metabolite in children and the implications for analgesia. Paediatr Anaesth 17(9): 831–40.	n=70	WEIRD: Australia
Hock MO, Ooi SB, Saw SM et al (2002) A randomized controlled trial comparing the hair apposition technique with tissue glue to standard suturing in scalp lacerations (HAT study). Ann Emerg Med 40(1): 19–26.	Data included previously	Data included previously

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Holford NH, Ma SC & Anderson BJ (2012) Prediction of morphine dose in humans. Paediatr Anaesth 22(3): 209–22.	n=246	WEIRD: Australia
Jacob E & Mueller BU (2008) Pain experience of children with sickle cell disease who had prolonged hospitalizations for acute painful episodes. Pain Med 9(1): 13–21.	n=29	WEIRD: US
Jo YY, Hong JY, Choi EK et al (2011) Ketorolac or fentanyl continuous infusion for post-operative analgesia in children undergoing ureteroneocystostomy. Acta Anaesthesiol Scand 55(1): 54–59.	n=52	Non-WEIRD: South Korea n=52
Johnston C, Campbell-Yeo M, Fernandes A et al (2014) Skin-to-skin care for procedural pain in neonates. Cochrane Database Syst Rev 1: CD008435.	n=1,594	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Brazil n=794 Non-WEIRD: China n=120 Non-WEIRD: Turkey n=157 Non-WEIRD: Iran n=224 Non-WEIRD: India n=65
Lambert P, Cyna AM, Knight N et al (2014) Clonidine premedication for postoperative analgesia in children. Cochrane Database Syst Rev 1: CD009633.	Data included previously	Data included previously
Liu Y, Seipel C, Lopez ME et al (2013) A retrospective study of multimodal analgesic treatment after laparoscopic appendectomy in children. Paediatr Anaesth 23(12): 1187–92.	n=206	WEIRD: US

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Machotta A, Risse A, Bercker S et al (2003) Comparison between instillation of bupivacaine versus caudal analgesia for postoperative analgesia following inguinal herniotomy in children. Paediatr Anaesth 13(5): 397–402.	n=58	WEIRD: N,W,S Europe
Marin Gabriel MA, del Rey Hurtado de Mendoza B, Jimenez Figueroa L et al (2013) Analgesia with breastfeeding in addition to skin-to-skin contact during heel prick. Arch Dis Child Fetal Neonatal Ed 98(6): F499–503.	Data included previously	Data included previously
Noel M, Chambers CT, McGrath PJ et al (2012) The influence of children's pain memories on subsequent pain experience. Pain 153(8): 1563–72.	n=110	WEIRD: US
O'Flaherty LA, van Dijk M, Albertyn R et al (2012) Aromatherapy massage seems to enhance relaxation in children with burns: an observational pilot study. Burns 38(6): 840–45.	n=71	Non-WEIRD: South Africa n=71
O'Sullivan MJ, Mislovic B & Alexander E (2011) Dorsal penile nerve block for male pediatric circumcision--randomized comparison of ultrasound-guided vs anatomical landmark technique. Paediatr Anaesth 21(12): 1214–18.	n=66	WEIRD: N,W,S Europe

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Olischar M, Palmer GM, Orsini F et al (2014) The addition of tramadol to the standard of i.v. acetaminophen and morphine infusion for postoperative analgesia in neonates offers no clinical benefit: A randomized placebo-controlled trial. Paediatr Anaesth 24(11): 1149–57.	n=71	WEIRD: Australia
Pedersen RS, Bayat A, Steen NP et al (2013) Nitrous oxide provides safe and effective analgesia for minor paediatric procedures - a systematic review. Dan Med J 60(6): A4627.	n=54,127	WEIRD: Australia WEIRD: N,W,S Europe WEIRD: US
Pickard A, Davies P, Birnie K et al (2014) Systematic review and meta-analysis of the effect of intraoperative alpha(2)-adrenergic agonists on postoperative behaviour in children. Br J Anaesth 112(6): 982–90.	Data included previously	Data included previously
Pickering AE, Bridge HS, Nolan J et al (2002) Double-blind, placebo-controlled analgesic study of ibuprofen or rofecoxib in combination with paracetamol for tonsillectomy in children. Br J Anaesth 88(1): 72–77.	n=103	WEIRD: N,W,S Europe
Pillai Riddell RR, Racine NM, Turcotte K et al (2011) Non-pharmacological management of infant and young child procedural pain. Cochrane Database Syst Rev 10: CD006275.	Data included previously	Data included previously

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Polaner DM, Taenzer AH, Walker BJ et al (2012) Pediatric Regional Anesthesia Network (PRAN): a multi-institutional study of the use and incidence of complications of pediatric regional anesthesia. Anesth Analg 115(6): 1353–64.	n=13,725	WEIRD: US
Priestley S, Kelly AM, Chow L et al (2003) Application of topical local anesthetic at triage reduces treatment time for children with lacerations: a randomized controlled trial. Ann Emerg Med 42(1): 34–40.	n=161,	WEIRD: Australia
Riad W & Moussa A (2007) Pre-operative analgesia with rectal diclofenac and/or paracetamol in children undergoing inguinal hernia repair. Anaesthesia 62(12): 1241–45.	n=108	Non-WEIRD: Saudi Arabia
Robert R, Brack A, Blakeney P et al (2003) A double-blind study of the analgesic efficacy of oral transmucosal fentanyl citrate and oral morphine in pediatric patients undergoing burn dressing change and tubbing. J Burn Care Rehabil 24(6): 351–55.	n=8	WEIRD: US
Standing JF, Savage I, Pritchard D et al (2009) Diclofenac for acute pain in children. Cochrane Database Syst Rev 4: CD005538.	Withdrawn but still cited in some 2021 publications	Withdrawn but still cited in some 2021 publications

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Stevens B, Yamada J, Lee GY et al (2013) Sucrose for analgesia in newborn infants undergoing painful procedures. Cochrane Database Syst Rev 1: CD001069.	Data included previously	Data included previously
Stoddard FJ, Ronfeldt H, Kagan J et al (2006) Young burned children: the course of acute stress and physiological and behavioral responses. Am J Psychiatry 163(6): 1084–90.	n=72	WEIRD: US
Taddio A, Shah V, Atenafu E et al (2009b) Influence of repeated painful procedures and sucrose analgesia on the development of hyperalgesia in newborn infants. Pain 144(1-2): 43–48.	n=240,	WEIRD: US
Taenzer AH, Walker BJ, Bosenberg AT et al (2014) Asleep versus awake: does it matter?: pediatric regional block complications by patient state: a report from the pediatric regional	n=50000	WEIRD: US
Taylor J, Liley A & Anderson BJ (2013) The relationship between age and morphine infusion rate in children. Paediatr Anaesth 23(1): 40–44.	n=886	WEIRD: Australia
Uri O, Yosefov L, Haim A et al (2011) Lidocaine gel as an anesthetic protocol for nasogastric tube insertion in the ED. Am J Emerg Med 29(4): 386–90.	n=62	Non-WEIRD: Israel n=62
van Baar ME, Polinder S, Essink-Bot ML et al (2011) Quality of life after burns in childhood (5–15 years): Children	n=138	WEIRD: N,W,S Europe

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
experience substantial problems. Burns 37(6): 930–38.		
van der Marel CD, Anderson BJ, Romsing J et al (2004) Diclofenac and metabolite pharmacokinetics in children. Paediatr Anaesth 14(6): 443–51.	n=26	WEIRD: N,W,S Europe
Vilo S, Rautiainen P, Kaisti K et al (2008) Pharmacokinetics of intravenous dexmedetomidine in children under 11 yr of age. Br J Anaesth 100(5): 697–700.	n=8	WEIRD: N,W,S Europe
Walker SM, Franck LS, Fitzgerald M et al (2009) Long-term impact of neonatal intensive care and surgery on somatosensory perception in children born extremely preterm. Pain 141(1–2): 79–87.	n=87	WEIRD: N,W,S Europe
Wang C, Allegaert K, Tibboel D et al (2014) Population pharmacokinetics of paracetamol across the human age-range from (pre)term neonates, infants, children to adults. J Clin Pharmacol 54(6): 619–29.	n=220	WEIRD: N,W,S Europe
Williams DG, Patel A & Howard RF (2002) Pharmacogenetics of codeine metabolism in an urban population of children and its implications for analgesic reliability. Br J Anaesth 89(6): 839–45.	n=96	WEIRD: N,W,S Europe

Table 11 Domain: Paediatric guidelines (SASA Guidelines 2015)		
Wolf AR & Hughes D (1993) Pain relief for infants undergoing abdominal surgery: comparison of infusions of i.v. morphine and extradural bupivacaine. Br J Anaesth 70(1): 10–16.	n=32	WEIRD: N,W,S Europe
Yao YS, Qian B, Chen BZ et al (2009) The optimum concentration of levobupivacaine for intra-operative caudal analgesia in children undergoing inguinal hernia repair at equal volumes of injectate. Anaesthesia 64(1): 23–26.	n=60	Non-WEIRD: China n=60
Yeaman F, Oakley E, Meek R et al (2013) Sub-dissociative dose intranasal ketamine for limb injury pain in children in the emergency department: a pilot study. Emerg Med Australas 25(2): 161–67.	n=28	WEIRD: Australia
Yee MM, Josephson C, Hill CE et al (2013) Cytochrome P450 2D6 polymorphisms and predicted opioid metabolism in African American children with sickle cell disease. J Pediatr Hematol Oncol 35(7): e301–05.	Data included previously	Data included previously
	Total n=272058(100%)	non-WEIRD: n=2844 (1%)

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Adunsky A, Levy R, Heim M et al (2002) Meperidine analgesia and delirium in aged hip fracture patients. Arch Gerontol Geriatr 35(3): 253–59.	n=92	Non-WEIRD: Israel: n=92
Burkhardt H, Bruckner D & Gladisch R (2005) Risk factors of worsening renal function in hospitalized elderly patients. J Nephrol 18(2): 166–73.	n=343	WEIRD: N,W,S Europe
Cole LJ, Farrell MJ, Duff EP et al (2006) Pain sensitivity and fMRI pain-related brain activity in Alzheimer's disease. Brain 129(Pt 11): 2957–65.	n=14	WEIRD: Australia
Cummings KC, 3rd, Xu F, Cummings LC et al (2012) A comparison of epidural analgesia and traditional pain management effects on survival and cancer recurrence after colectomy: a population-based study. Anesthesiology 116(4): 797–806.	n=42,151	WEIRD: US
Foss NB, Kristensen MT, Kristensen BB et al (2005) Effect of postoperative epidural analgesia on rehabilitation and pain after hip fracture surgery: a randomized, double-blind, placebo-controlled trial. Anesthesiology 102(6): 1197	n=60	WEIRD: N,W,S Europe
Gagliese L & Katz J (2003) Age differences in postoperative pain are scale dependent: a comparison of measures of pain intensity and quality in younger and older surgical patients. Pain 103(1–2): 11–20.	n=200	WEIRD: US

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Gnjidic D, Blyth FM, Le Couteur DG et al (2014) Nonsteroidal anti-inflammatory drugs (NSAIDs) in older people: prescribing patterns according to pain prevalence and adherence to clinical guidelines. Pain 155(9): 1814–20.	n = 1696	WEIRD: Australia
Granot M, Khoury R, Berger G et al (2007) Clinical and experimental pain perception is attenuated in patients with painless myocardial infarction. Pain 133(1–3): 120–27.	n=92	Non-WEIRD: Israel: n=92
Herrick IA, Ganapathy S, Komar W et al (1996) Postoperative cognitive impairment in the elderly. Choice of patient-controlled analgesia opioid. Anaesthesia 51(4): 356–60.	n=96,	WEIRD: US
Jarupongprapa S, Ussavasodhi P & Katchamart W (2013) Comparison of gastrointestinal adverse effects between cyclooxygenase-2 inhibitors and non-selective, non-steroidal anti-inflammatory drugs plus proton pump inhibitors: a systematic review and meta-analysis. J Gastroenterol 48(7): 830–38.	n=7,616	Non-WEIRD: Hong Kong: n=751 WEIRD: US WEIRD: N,W,S Europe CONDOR Trial (Non-WEIRD: n=3587)
Juhlin T, Bjorkman S & Hoglund P (2005) Cyclooxygenase inhibition causes marked impairment of renal function in elderly subjects treated with diuretics and ACE-inhibitors. Eur J Heart Fail 7(6): 1049–56.	n=14	WEIRD: N,W,S Europe

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Keita H, Geachan N, Dahmani S et al (2003) Comparison between patient-controlled analgesia and subcutaneous morphine in elderly patients after total hip replacement. Br J Anaesth 90(1): 53–57.	n=40	WEIRD: N,W,S Europe
Koppert W, Frotsch K, Huzurudin N et al (2006) The effects of paracetamol and parecoxib on kidney function in elderly patients undergoing orthopedic surgery. Anesth Analg 103(5): 1170–76.	n=75	WEIRD: N,W,S Europe
Lautenbacher S (2012) Experimental approaches in the study of pain in the elderly. Pain Med 13(Suppl 2): S44–50.	n= 13,580	WEIRD: N,W,S Europe WEIRD: US, North America WEIRD: Australia Non-WEIRD: Turkey n=100 Non-WEIRD: Taiwan: n=54
Leino KA, Kuusniemi KS, Lertola KK et al (2011) Comparison of four pain scales in patients with hip fracture or other lower limb trauma. Acta Anaesthesiol Scand 55(4): 495–502.	n=140	WEIRD: N,W,S Europe
Li SF, Greenwald PW, Gennis P et al (2001) Effect of age on acute pain perception of a standardized stimulus in the emergency department. Ann Emerg Med 38(6): 644–47.	n=1108	WEIRD: US, North America
Li Y, Zhu S, Bao F et al (2006) The effects of age on the median effective concentration of ropivacaine for motor blockade after epidural anesthesia with ropivacaine. Anesth Analg 102(6): 1847–50.	n=80	Non-WEIRD: China: n=80

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Macintyre PE & Jarvis DA (1996) Age is the best predictor of postoperative morphine requirements. Pain 64(2): 357–64.	n=1010	WEIRD: Australia
Mann C, Pouzeratte Y, Boccara G et al (2000) Comparison of intravenous or epidural patient-controlled analgesia in the elderly after major abdominal surgery. Anesthesiology 92(2): 433–41.	Data included previously	Data included previously
Mitchell SJ, Hilmer SN, Murnion BP et al (2011a) Hepatotoxicity of therapeutic short-course paracetamol in hospital inpatients: impact of ageing and frailty. J Clin Pharm Ther 36(3): 327–35.	n=71	WEIRD: Australia
Morrison RS & Siu AL (2000) A comparison of pain and its treatment in advanced dementia and cognitively intact patients with hip fracture. J Pain Symptom Manage 19(4): 240–48.	n=541	WEIRD: US, North America
Pesonen A, Suojaranta-Ylinen R, Tarkkila P et al (2008) Applicability of tools to assess pain in elderly patients after cardiac surgery. Acta Anaesthesiol Scand 52(2): 267–73.	n=160	WEIRD: Australia
Pilotto A, Franceschi M, Leandro G et al (2003) The risk of upper gastrointestinal bleeding in elderly users of aspirin and other non-steroidal anti-inflammatory drugs: the role of gastroprotective drugs. Aging Clin Exp Res 15(6): 494–99.	n=467	WEIRD: N,W,S Europe

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Popping DM, Elia N, Van Aken HK et al (2014) Impact of epidural analgesia on mortality and morbidity after surgery: systematic review and meta-analysis of randomized controlled trials. Ann Surg 259(6): 1056–67.	n=9,044	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US, North America Non-WEIRD: South Korea: n=72 Non-WEIRD: Czech Republic: n=16 Non-WEIRD: Lithuania: n=90 Non-WEIRD: China: n=103
Quinn AC, Brown JH, Wallace PG et al (1994) Studies in postoperative sequelae. Nausea and vomiting--still a problem. Anaesthesia 49(1): 62–65.	n=3244	WEIRD: N,W,S Europe
Radinovic K, Milan Z, Markovic-Denic L et al (2014) Predictors of severe pain in the immediate postoperative period in elderly patients following hip fracture surgery. Injury 45(8): 1246–50.	n=344	Non-WEIRD: Serbia: n=344
Ready LB, Chadwick HS & Ross B (1987) Age predicts effective epidural morphine dose after abdominal hysterectomy. Anesth Analg 66(12): 1215–18.	n=66	WEIRD: US, North America
Simon MJ, Veering BT, Stienstra R et al (2004) Effect of age on the clinical profile and systemic absorption and disposition of levobupivacaine after epidural administration. Br J Anaesth 93(4): 512–20.	n=31	WEIRD: N,W,S Europe
Solomon DH, Rassen JA, Glynn RJ et al (2010) The comparative safety of analgesics in older adults with arthritis. Arch Intern Med 170(22): 1968–76.	n=12,840	WEIRD: US, North America

Table 12 Domain: Acute pain management in the elderly patient (SASA Guidelines 2015)

Stotts N, Puntillo K, Stanik-Hutt J et al (2007) Does age make a difference in procedural pain perceptions and responses in hospitalized adults? Acute Pain 9(3): 125–3	n=5,957	WEIRD: US, North America
Thomas T, Robinson C, Champion D et al (1998) Prediction and assessment of the severity of post-operative pain and of satisfaction with management. Pain 75(2-3): 177–85.	n=91	WEIRD: Australia
Woodhouse A & Mather LE (1997) The influence of age upon opioid analgesic use in the patient-controlled analgesia (PCA) environment. Anaesthesia 52(10): 949–55.	Data included previously	Data included previously
Zhang J, Ding EL & Song Y (2006) Adverse effects of cyclooxygenase 2 inhibitors on renal and arrhythmia events: meta-analysis of randomized trials. JAMA 296(13): 1619–32.	Multigroup trial - country of various data points not disclosed	Multigroup trial - country of various data points not disclosed
	Total n=101263(100%)	non-WEIRD: n=5381(5.3%)

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Referenced Studies:	Population data set:	Category:

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Anim-Somuah M, Smyth RM & Jones L (2011) Epidural versus non-epidural or no analgesia in labour. Cochrane Database Syst Rev 12: CD000331.	n=9,658	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Taiwan n=318 Non-WEIRD: China n=355 Non-WEIRD: Egypt n=30 Non-WEIRD: Israel n=257 Non-WEIRD: India n=128 Non-WEIRD: Mexico n=129 Non-WEIRD: Iran n=395 Non-WEIRD: Russia n=90
Baka NE, Bayoumeu F, Boutroy MJ et al (2002) Colostrum morphine concentrations during postcesarean intravenous patient-controlled analgesia. Anesth Analg 94(1): 184–87.	n=7	WEIRD: N,W,S Europe
Baldacchino A, Arbuckle K, Petrie DJ et al (2014) Neurobehavioral consequences of chronic intrauterine opioid exposure in infants and preschool children: a systematic review and meta-analysis. BMC Psychiatry 14: 104.	Original article retracted	Original article retracted
Carvalho B, Zheng M & Aiono-Le Tagaloa L (2014) A prospective observational study evaluating the ability of prelabor psychological tests to predict labor pain, epidural analgesic consumption, and maternal satisfaction. Anesth Analg 119(3): 632–40.	n=39	WEIRD: Australia
Chooi CS, White AM, Tan SG et al (2013) Pain vs comfort scores after Caesarean section: a	n=300	WEIRD: Australia

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
randomized trial. Br J Anaesth 110(5): 780–87.		
Clunie M, Crone LA, Klassen L et al (2003) Psychiatric side effects of indomethacin in parturients. Can J Anaesth 50(6): 586–88.	n=32	WEIRD: Australia
Daniel S, Koren G, Lunenfeld E et al (2014) Fetal exposure to nonsteroidal anti-inflammatory drugs and spontaneous abortions. CMAJ 186(5): E177–82.	n=65,457	Non-WEIRD: Israel
Dieterich M, Muller-Jordan K, Stubert J et al (2012) Pain management after cesarean: a randomized controlled trial of oxycodone versus intravenous piritramide. Arch Gynecol Obstet 286(4): 859–65.	n=239	WEIRD: N,W,S Europe
Edwards DR, Aldridge T, Baird DD et al (2012) Periconceptional over-the-counter nonsteroidal anti-inflammatory drug exposure and risk for spontaneous abortion. Obstet Gynecol 120(1): 113–22.	n=2,780	WEIRD: US
Freeman LM, Bloemenkamp KW, Franssen MT et al (2015) Patient controlled analgesia with remifentanil versus epidural analgesia in labour: randomised multicentre equivalence trial. BMJ 350: h846.	n=1,414	WEIRD: N,W,S Europe
Gardiner SJ, Doogue MP, Zhang M et al (2006) Quantification of infant exposure to celecoxib through breast milk. Br J Clin Pharmacol 61(1): 101–04.	n=6	WEIRD: Australia

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Gerbershagen HJ, Aduckathil S, van Wijck AJ et al (2013) Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. Anesthesiology 118(4): 934–44.	Reference for obstetric data not stated	Reference for obstetric data not stated
Ilett KF, Paech MJ, Page-Sharp M et al (2008) Use of a sparse sampling study design to assess transfer of tramadol and its O-desmethyl metabolite into transitional breast milk. Br J Clin Pharmacol 65(5): 661–66.	n=75	WEIRD: Australia
Klomp T, van Poppel M, Jones L et al (2012) Inhaled analgesia for pain management in labour. Cochrane Database Syst Rev 9: CD009351.	n=2,959	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: China n=819 Non-WEIRD: Singapore n=101 Non-WEIRD: Iran n=689
Koren G, Florescu A, Costei AM et al (2006) Nonsteroidal antiinflammatory drugs during third trimester and the risk of premature closure of the ductus arteriosus: a meta-analysis. Ann Pharmacother 40(5): 824–29.	n=438	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Israel n=33
Li DK, Liu L & Odouli R (2003) Exposure to non-steroidal anti-inflammatory drugs during pregnancy and risk of miscarriage: population based cohort study. BMJ 327(7411): 368.	n=1055	WEIRD: US
Liew Z, Ritz B, Rebordosa C et al (2014) Acetaminophen use during pregnancy, behavioral problems, and hyperkinetic disorders. JAMA Pediatr 168(4): 313–20.	n=64,322	WEIRD: N,W,S Europe

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Likis FE, Andrews JC, Collins MR et al (2014) Nitrous oxide for the management of labor pain: a systematic review. Anesth Analg 118(1): 153–67.	Data included previously	Data included previously
McDonnell NJ, Paech MJ, Browning RM et al (2010) A randomised comparison of regular oral oxycodone and intrathecal morphine for post-caesarean analgesia. Int J Obstet Anesth 19(1): 16–23.	n=111	WEIRD: Australia
Meny RG, Naumburg EG, Alger LS et al (1993) Codeine and the breastfed neonate. J Hum Lact 9(4): 237–40.	Data included previously	Data included previously
Mkontwana N & Novikova N (2015) Oral analgesia for relieving post-caesarean pain. Cochrane Database Syst Rev 3: CD010450.	n=962	Non-WEIRD: Taiwan: n=60 WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Hong Kong n=60 Non-WEIRD: Israel n=120
Nakhai-Pour HR, Broy P, Sheehy O et al (2011) Use of nonaspirin nonsteroidal anti-inflammatory drugs during pregnancy and the risk of spontaneous abortion. CMAJ 183(15): 1713–20.	n=4,725	WEIRD: US
Notarianni LJ, Oldham HG & Bennett PN (1987) Passage of paracetamol into breast milk and its subsequent metabolism by the neonate. Br J Clin Pharmacol 24(1): 63–67.	n=4	WEIRD: N,W,S Europe
Orlikowski CE, Dickinson JE, Paech MJ et al (2006) Intrapartum analgesia and its association with post-partum back pain and headache in nulliparous women. Aust N Z J Obstet Gynaecol 46(5): 395–401.	n=992	WEIRD: Australia

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Paech MJ, Salman S, Ilett KF et al (2012) Transfer of parecoxib and its primary active metabolite valdecoxib via transitional breastmilk following intravenous parecoxib use after cesarean delivery: a comparison of naive pooled data analysis and nonlinear mixed-effects modeling. Anesth Analg 114(4): 837–44.	n=40	WEIRD: Australia
Rebordosa C, Kogevinas M, Horvath-Puho E et al (2008) Acetaminophen use during pregnancy: effects on risk for congenital abnormalities. Am J Obstet Gynecol 198(2): 178 e1–7.	n=88,142	WEIRD: N,W,S Europe
Sammour RN, Ohel G, Cohen M et al (2011) Oral naproxen versus oral tramadol for analgesia after cesarean delivery. Int J Gynaecol Obstet 113(2): 144–47.	Data included previously	Data included previously
Simmons SW, Taghizadeh N, Dennis AT et al (2012) Combined spinal-epidural versus epidural analgesia in labour. Cochrane Database Syst Rev 10: CD003401.	n=3,274	WEIRD: N,W,S Europe WEIRD: US
Thienthong S, Chongsomchai C & Kemthong W (2012) A placebo-controlled, double-blind, randomized study of single- dose intravenous diclofenac for pain relief after a cesarean section. Acta Anaesthesiol Taiwan 50(4): 150–52.	n=30	Non-WEIRD: Thailand: n=30

Table 13 Domain: Analgesia during pregnancy, childbirth, the puerperium and lactation (SASA 2015)		
Ullman R, Smith LA, Burns E et al (2010) Parenteral opioids for maternal pain relief in labour. Cochrane Database Syst Rev 9: CD007396.	n=7,000	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: South Africa: n=300 Non-WEIRD: Iran n=88 Non-WEIRD: Turkey n=219 Non-WEIRD: Argentina n=310 Non-WEIRD: China n=70 Non-WEIRD: Brazil n=56 Non-WEIRD: Thailand: n=335 Non-WEIRD: Egypt n=170 Non-WEIRD: India n=300 Non-WEIRD: Hong Kong n=50 Non-WEIRD: Singapore n=90
Velez Edwards DR & Hartmann KE (2014) Racial differences in risk of spontaneous abortions associated with periconceptional over-the-counter nonsteroidal anti-inflammatory drug exposure. Ann Epidemiol 24(2): 111–15 e1.	n=2493	WEIRD: US
Wittels B, Scott DT & Sinatra RS (1990) Exogenous opioids in human breast milk and acute neonatal neurobehavior: a preliminary study. Anesthesiology 73(5): 864–69.	n=5	WEIRD: US
	Total n=25655 (100%)	non-WEIRD: n=5602 (2.2%)

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Referenced Studies:	Population data set:	Category:

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Ashburn MA, Love G & Pace NL (1994) Respiratory-related critical events with intravenous patient-controlled analgesia. Clin J Pain 10(1): 52–56.	n=3,785	WEIRD: US
Bainbridge D, Martin JE & Cheng DC (2006) Patient-controlled versus nurse-controlled analgesia after cardiac surgery-a meta-analysis. Can J Anaesth 53(5): 492–99.	n=666	WEIRD: Australia WEIRD: US WEIRD: N,W,S Europe
Bell JG, Shaffer LE & Schrickel-Feller T (2007) Randomized trial comparing 3 methods of postoperative analgesia in gynecology patients: patient-controlled intravenous, scheduled intravenous, and scheduled subcutaneous. Am J Obstet Gynecol 197(5): 472 e1–7.	n=130	WEIRD: US
Birnbaum A, Schechter C, Tufaro V et al (2012) Efficacy of patient-controlled analgesia for patients with acute abdominal pain in the emergency department: a randomized trial. Acad Emerg Med 19(4): 370–77.	n=211	WEIRD: US
Blaudszun G, Lysakowski C, Elia N et al (2012) Effect of perioperative systemic alpha2 agonists on postoperative morphine consumption and pain intensity: systematic review and meta-analysis of randomized controlled trials. Anesthesiology	Data included previously	Data included previously
Camu F, Van Aken H & Bovill JG (1998) Postoperative analgesic effects of three demand-dose sizes of fentanyl administered by patient-controlled analgesia. Anesth Analg 87(4): 890–95.	n=150	WEIRD: N,W,S Europe

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Carstensen M & Moller AM (2010) Adding ketamine to morphine for intravenous patient-controlled analgesia for acute postoperative pain: a qualitative review of randomized trials. Br J Anaesth 104(4): 401–06.	Data included previously	Data included previously
Cepeda MS, Alvarez H, Morales O et al (2004) Addition of ultralow dose naloxone to postoperative morphine PCA: unchanged analgesia and opioid requirement but decreased incidence of opioid side effects. Pain 107(1–2): 41–46.	n=265	Non-WEIRD: Columbia
Cheung CW, Ying CL, Lee LH et al (2009) An audit of postoperative intravenous patient-controlled analgesia with morphine: evolution over the last decade. Eur J Pain 13(5): 464–71.	n=5,137	Non-WEIRD: Hong Kong
Culebras X, Corpataux JB, Gaggero G et al (2003) The antiemetic efficacy of droperidol added to morphine patient-controlled analgesia: a randomized, controlled, multicenter dose-finding study. Anesth Analg 97(3): 816–21.	n=340	WEIRD: N,W,S Europe
George JA, Lin EE, Hanna MN et al (2010) The effect of intravenous opioid patient-controlled analgesia with and without background infusion on respiratory depression: a meta-analysis. J Opioid Manag 6(1): 47–54.	Article no longer available	Article no longer available

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Ginsberg B, Gil KM, Muir M et al (1995) The influence of lockout intervals and drug selection on patient-controlled analgesia following gynecological surgery. Pain 62(1): 95–100.	n=78	WEIRD: US
Howell PR, Gambling DR, Pavy T et al (1995) Patient-controlled analgesia following caesarean section under general anaesthesia: a comparison of fentanyl with morphine. Can J Anaesth 42(1): 41–45.	n=37	WEIRD: Australia
Hudcova J, McNicol E, Quah C et al (2006) Patient controlled opioid analgesia versus conventional opioid analgesia for postoperative pain. Cochrane Database Syst Rev 4: CD003348.	n=3,861	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: India n=20 Non-WEIRD: Israel n=23 Non-WEIRD: Thailand n=42 Non-WEIRD: China n=26
Hutchison RW, Chon EH, Tucker J, William F et al (2006) A comparison of a fentanyl, morphine, and hydromorphone patient-controlled intravenous delivery for acute postoperative analgesia: A multicenter study of opioid- induced adverse reactions. Hosp Pharm 41(7): 659–63.	n=254	WEIRD: US
Kucukemre F, Kunt N, Kaygusuz K et al (2005) Remifentanil compared with morphine for postoperative patient-controlled analgesia after major abdominal surgery: a randomized controlled trial. Eur J Anaesthesiol 22(5): 378–85.	n=69	Non-WEIRD: Turkey n=69

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Laskowski K, Stirling A, McKay WP et al (2011) A systematic review of intravenous ketamine for postoperative analgesia. Can J Anaesth 58(10): 911–23.	Data included previously	Data included previously
Lenz H, Sandvik L, Qvigstad E et al (2009) A comparison of intravenous oxycodone and intravenous morphine in patient-controlled postoperative analgesia after laparoscopic hysterectomy. Anesth Analg 109(4): 1279–83.	n=91	WEIRD: N,W,S Europe
Lepri A, Sia S, Catinelli S et al (2006) Patient-controlled analgesia with tramadol versus tramadol plus ketorolac. Minerva Anestesiol 72(1-2): 59–67.	n=100	WEIRD: N,W,S Europe
Lo Y, Chia YY, Liu K et al (2005) Morphine sparing with droperidol in patient-controlled analgesia. J Clin Anesth 17(4): 271–75.	n=179	Non-WEIRD: Taiwan n=179
Looi-Lyons LC, Chung FF, Chan VW et al (1996) Respiratory depression: an adverse outcome during patient controlled analgesia therapy. J Clin Anesth 8(2): 151–56.	n=4,000	WEIRD: US
Manjushree R, Lahiri A, Ghosh BR et al (2002) Intranasal fentanyl provides adequate postoperative analgesia in pediatric patients. Can J Anaesth 49(2): 190–93.	n=40	Non-WEIRD: India n=40

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Murphy JD, Yan D, Hanna MN et al (2010) Comparison of the postoperative analgesic efficacy of intravenous patient-controlled analgesia with tramadol to intravenous patient-controlled analgesia with opioids. J Opioid Manag 6(2): 141–47.	Not able to access article	Not able to access article
Owen H, Plummer JL, Armstrong I et al (1989a) Variables of patient-controlled analgesia. 1. Bolus size. Anaesthesia 44(1): 7–10.	n=21,	WEIRD: Australia
Palmer P, Ji X & Stephens J (2014) Cost of opioid intravenous patient-controlled analgesia: results from a hospital database analysis and literature assessment. Clinicoecon Outcomes Res 6: 311–18.	US costing study…excluded from SA guidelines	US costing study…excluded from SA guidelines
Parker RK, Holtmann B & White PF (1991) Patient-controlled analgesia. Does a concurrent opioid infusion improve pain management after surgery? JAMA 266(14): 1947–52.	n=230	WEIRD: US
Rahman NHNA & DeSilva T (2012) A randomized controlled trial of patient-controlled analgesia compared with boluses of analgesia for the control of acute traumatic pain in the emergency department. J Emerg Med 43(6): 951–57.	n=96,	Non-WEIRD: Malaysia: n=96
Shapiro A, Zohar E, Zaslansky R et al (2005) The frequency and timing of respiratory depression in 1524 postoperative patients treated with systemic or neuraxial morphine. J Clin Anesth 17(7): 537–42.	n=1524	Non-WEIRD: Israel n=1524

Table 14 Domain: patient-controlled analgesia (SASA Guidelines 2015)		
Silvasti M, Rosenberg P, Seppala T et al (1998) Comparison of analgesic efficacy of oxycodone and morphine in postoperative intravenous patient-controlled analgesia. Acta Anaesthesiol Scand 42(5): 576–80.	n=50	WEIRD: N,W,S Europe
Striebel HW, Oelmann T, Spies C et al (1996) Patient-controlled intranasal analgesia: a method for noninvasive postoperative pain management. Anesth Analg 83(3): 548–51.	n=50	WEIRD: N,W,S Europe
Striebel HW, Scheitza W, Philippi W et al (1998) Quantifying oral analgesic consumption using a novel method and comparison with patient-controlled intravenous analgesic consumption. Anesth Analg 86(5): 1051–53.	n=64	WEIRD: N,W,S Europe
Unlugenc H, Ozalevli M, Guler T et al (2003) Postoperative pain management with intravenous patient-controlled morphine: comparison of the effect of adding magnesium or ketamine. Eur J Anaesthesiol 20(5): 416–21.	n=90	Non-WEIRD: Turkey: n=90
Woodhouse A, Hobbes AF, Mather LE et al (1996) A comparison of morphine, pethidine and fentanyl in the postsurgical patient-controlled analgesia environment. Pain 64(1): 115–21.	n=55	WEIRD: Australia
	Total n=21573(100%)	non-WEIRD: n=2109 (10%)

Table 15 Domain: Epidural analgesia (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Afshan G, Chohan U, Khan FA et al (2011) Appropriate length of epidural catheter in the epidural space for postoperative analgesia: evaluation by epidurography. Anaesthesia 66(10): 913–18.	n=102	Non-WEIRD: Pakistan: n=102
Bateman BT, Mhyre JM, Ehrenfeld J et al (2013) The risk and outcomes of epidural hematomas after perioperative and obstetric epidural catheterization: a report from the Multicenter Perioperative Outcomes Group Research Consortium. Anesth Analg 116(6): 1380–85.	n=62,450	WEIRD: US, North America
Bayazit EG, Karaaslan K, Ozturan K et al (2013) Effect of epidural levobupivacaine and levobupivacaine with fentanyl on stress response and postoperative analgesia after total knee replacement. Int J Clin Pharmacol Ther 51(8): 652–9.	n=40	Non-WEIRD: Turkey: n=40
Cameron CM, Scott DA, McDonald WM et al (2007) A review of neuraxial epidural morbidity: experience of more than 8,000 cases at a single teaching hospital. Anesthesiology 106(5): 997–1002.	n=8,210	WEIRD: Australia
Cook TM, Counsell D & Wildsmith JA (2009) Major complications of central neuraxial block: report on the Third National Audit Project of the Royal College of Anaesthetists. Br J Anaesth 102(2): 179–90.	n=97,925	WEIRD: N,W,S Europe

Table 15 Domain: Epidural analgesia (SASA Guidelines 2015)

Curatolo M, Petersen-Felix S, Scaramozzino P et al (1998) Epidural fentanyl, adrenaline and clonidine as adjuvants to local anaesthetics for surgical analgesia: meta-analyses of analgesia and side-effects. Acta Anaesthesiol Scand 42(8): 910–20.	n=1019	WEIRD: US WEIRD: N,W,S Europe
Davis DP, Wold RM, Patel RJ et al (2004) The clinical presentation and impact of diagnostic delays on emergency department patients with spinal epidural abscess. J Emerg Med 26(3): 285–91.	n=189	WEIRD: US
Golster M (2014) Seven years of patient-controlled epidural analgesia in a Swedish hospital: a prospective survey. Eur J Anaesthesiol 31(11): 589–96.	n=4,663	WEIRD: N,W,S Europe
Gramigni E, Bracco D & Carli F (2013) Epidural analgesia and postoperative orthostatic haemodynamic changes: observational study. Eur J Anaesthesiol 30(7): 398–404.	n=161	WEIRD: US
Jeon HR, Chae WS, Lee SJ et al (2011) A comparison of sufentanil and fentanyl for patient-controlled epidural analgesia in arthroplasty. Korean J Anesthesiol 60(1): 41–46.	n=80	Non-WEIRD: South Korea:
Kanai A, Osawa S, Suzuki A et al (2007) Regression of sensory and motor blockade, and analgesia during continuous epidural infusion of ropivacaine and fentanyl in comparison with other local anesthetics. Pain Med 8(7): 546–53.	n=119	Non-WEIRD: Japan

Table 15 Domain: Epidural analgesia (SASA Guidelines 2015)

Kang XH, Bao FP, Xiong XX et al (2014) Major complications of epidural anesthesia: a prospective study of 5083 cases at a single hospital. Acta Anaesthesiol Scand 58(7): 858–66.	n=5,083	Non-WEIRD: China
Liu SS, Bieltz M, Wukovits B et al (2010) Prospective survey of patient-controlled epidural analgesia with bupivacaine and hydromorphone in 3736 postoperative orthopedic patients. Reg Anesth Pain Med 35(4): 351–54.	n=3,736	WEIRD: US
Moen V, Dahlgren N & Irestedt L (2004) Severe neurological complications after central neuraxial blockades in Sweden 1990-1999. Anesthesiology 101(4): 950–59.	Data included previously	Data included previously
Nishimori M, Low JH, Zheng H et al (2012) Epidural pain relief versus systemic opioid-based pain relief for abdominal aortic surgery. Cochrane Database Syst Rev 7: CD005059.	n=1,297	Non-WEIRD: Israel: n=92 WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Pitkanen MT, Aromaa U, Cozanitis DA et al (2013) Serious complications associated with spinal and epidural anaesthesia in Finland from 2000 to 2009. Acta Anaesthesiol Scand 57(5): 553–64.	n=26,400	WEIRD: N,W,S Europe
Popping DM, Elia N, Van Aken HK et al (2014) Impact of epidural analgesia on mortality and morbidity after surgery: systematic review and meta-analysis of randomized controlled trials. Ann Surg 259(6): 1056–67.	Data included previously	Data included previously

Table 15 Domain: Epidural analgesia (SASA Guidelines 2015)

Pumberger M, Memtsoudis SG, Stundner O et al (2013) An analysis of the safety of epidural and spinal neuraxial anesthesia in more than 100,000 consecutive major lower extremity joint replacements. Reg Anesth Pain Med 38(6): 515–19.	n=62,856	WEIRD: N,W,S Europe
Reihsaus E, Waldbaur H & Seeling W (2000) Spinal epidural abscess: a meta-analysis of 915 patients. Neurosurg Rev 23(4): 175–204; discussion 05	n=915	WEIRD: N,W,S Europe
Ruppen W, Derry S, McQuay H et al (2006a) Incidence of epidural hematoma, infection, and neurologic injury in obstetric patients with epidural analgesia/anesthesia. Anesthesiology 105(2): 394–99.	1.37 million	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US
Ruppen W, Derry S, McQuay HJ et al (2006b) Incidence of epidural haematoma and neurological injury in cardiovascular patients with epidural analgesia/anaesthesia: systematic review and meta-analysis. BMC Anesthesiol 6: 10.	n=14,105	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: India: n=2113
Schug SA, Scott DA, Payne J et al (1996) Postoperative analgesia by continuous extradural infusion of ropivacaine after upper abdominal surgery. Br J Anaesth 76(4): 487–91.	n=50	WEIRD: Australia
Scott DA, Chamley DM, Mooney PH et al (1995) Epidural ropivacaine infusion for postoperative analgesia after major lower abdominal surgery--a dose finding study. Anesth Analg 81(5): 982–86.	n=40	WEIRD: Australia

Table 15 Domain: Epidural analgesia (SASA Guidelines 2015)

Scott DA, Blake D, Buckland M et al (1999) A comparison of epidural ropivacaine infusion alone and in combination with 1, 2, and 4 microg/mL fentanyl for seventy-two hours of postoperative analgesia after major abdominal surgery. Anesth Analg 88(4): 857–64.	n=244,	WEIRD: Australia
Wang LP, Hauerberg J & Schmidt JF (1999) Incidence of spinal epidural abscess after epidural analgesia: a national 1-year survey. Anesthesiology 91(6): 1928–36.	n=17,372	WEIRD: N,W,S Europe
Wijeysundera DN, Beattie WS, Austin PC et al (2008) Epidural anaesthesia and survival after intermediate-to-high risk non-cardiac surgery: a population-based cohort study. Lancet 372(9638): 562–69.	n=259 037	WEIRD: US
Wulf H (1996) Epidural anaesthesia and spinal haematoma. Can J Anaesth 43(12): 1260–71.	Data included previously	Data included previously
Zhang J, Zheng YY, Feng ZY et al (2012) Epidural fentanyl decreases the minimum local analgesic concentration of epidural lidocaine. Chin Med J (Engl) 125(22): 3977–80.	n=120	Non-WEIRD: China
	Total n=1936213(100%)	WEIRD: n=7749 (0.4%)

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Abbaspoor Z, Akbari M & Najar S (2014) Effect of foot and hand massage in post-cesarean section pain control: a randomized control trial. Pain Manag Nurs 15(1): 132–36.	n=80	Non-WEIRD: Iran: n=80
Adib-Hajbaghery M & Etri M (2013) Effect of acupressure of Ex-Le7 point on pain, nausea and vomiting after appendectomy: A randomized trial. J Res Med Sci 18(6): 482–86.	n=70	Non-WEIRD: Iran: n=70
Adie S, Kwan A, Naylor JM et al (2012) Cryotherapy following total knee replacement. Cochrane Database Syst Rev 9: CD007911.	n=809	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Egypt: n=30
Albert NM, Gillinov AM, Lytle BW et al (2009) A randomized trial of massage therapy after heart surgery. Heart Lung 38(6): 480–90.	n=252	WEIRD: US
Amin-Hanjani S, Corcoran J & Chatwani A (1992) Cold therapy in the management of postoperative cesarean section pain. Am J Obstet Gynecol 167(1): 108–09.	n=62,	WEIRD: US
Asher GN, Jonas DE, Coeytaux RR et al (2010) Auriculotherapy for pain management: a systematic review and meta- analysis of randomized controlled trials. J Altern Complement Med 16(10): 1097–108.	n=551	Non-WEIRD: China: n=64 Non-WEIRD: Brazil: n=48 WEIRD: US WEIRD: N,W,S Europe

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Barlow T, Downham C & Barlow D (2013) The effect of complementary therapies on post-operative pain control in ambulatory knee surgery: a systematic review. Complement Ther Med 21(5): 529–34.	n=222	WEIRD: N,W,S Europe
Bauer BA, Cutshall SM, Wentworth LJ et al (2010) Effect of massage therapy on pain, anxiety, and tension after cardiac surgery: a randomized study. Complement Ther Clin Pract 16(2): 70–75.	n=113	WEIRD: US
Bedwell C, Dowswell T, Neilson JP et al (2011) The use of transcutaneous electrical nerve stimulation (TENS) for pain relief in labour: a review of the evidence. Midwifery 27(5): e141–48.	n=1,456	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Taiwan n=100 Non-WEIRD: Brazil: n=22 Non-WEIRD: India: n=300 Non-WEIRD: China n=120
Borckardt JJ, Reeves ST, Kotlowski P et al (2014) Fast left prefrontal rTMS reduces post-gastric bypass surgery pain: findings from a large-scale, double-blind, sham-controlled clinical trial. Brain Stimul 7(1): 42–48.	n=113	WEIRD: US
Cepeda MS, Carr DB, Lau J et al (2006) Music for pain relief. Cochrane Database Syst Rev(2): CD004843.	Article has been withdrawn	Article has been withdrawn
Chang LH, Hsu CH, Jong GP et al (2012) Auricular acupressure for managing postoperative pain and knee motion in patients with total knee replacement: a randomized sham control study. Evid Based Complement Alternat Med 2012: 528452.	n=68	Non-WEIRD: Taiwan n=68

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Cho YH, Kim CK, Heo KH et al (2015) Acupuncture for acute postoperative pain after back surgery: a systematic review and meta-analysis of randomized controlled trials. Pain Pract 15(3): 279–91.	n=480	WEIRD: N,W,S Europe Non-WEIRD: Taiwan n=248 Non-WEIRD: China n=90
Cole LC & LoBiondo-Wood G (2014) Music as an adjuvant therapy in control of pain and symptoms in hospitalized adults: a systematic review. Pain Manag Nurs 15(1): 406–25.	n=1,937	WEIRD: N,W,S Europe Non-WEIRD: Hong Kong n=109 Non-WEIRD: Taiwan n=186 Non-WEIRD: Iran n=77 WEIRD: US WEIRD: Australia
Dahlen HG, Homer CS, Cooke M et al (2009) 'Soothing the ring of fire': Australian women's and midwives' experiences of using perineal warm packs in the second stage of labour. Midwifery 25(2): e39–48.	n=717	WEIRD: Australia
Dias M, Carneiro NM, Guerra LA et al (2010) Effects of electroacupuncture on local anaesthesia for inguinal hernia repair: a randomised placebo-controlled trial. Acupunct Med 28(2): 65–70.	n=33	Non-WEIRD: Brazil n=33
East CE, Begg L, Henshall NE et al (2012) Local cooling for relieving pain from perineal trauma sustained during childbirth. Cochrane Database Syst Rev 5: CD006304	n=1,825	WEIRD: N,W,S Europe WEIRD: US
El-Rakshy M, Clark SC, Thompson J et al (2009) Effect of intraoperative electroacupuncture on postoperative pain, analgesic requirements, nausea and sedation: a randomised controlled trial. Acupunct Med 27(1): 9–12.	n=107,	WEIRD: N,W,S Europe

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Garssen B, Boomsma MF, Meezenbroek Ede J et al (2013) Stress management training for breast cancer surgery patients. Psychooncology 22(3): 572–80.	n=70	WEIRD: N,W,S Europe
Haythornthwaite JA, Lawrence JW & Fauerbach JA (2001) Brief cognitive interventions for burn pain. Ann Behav Med 23(1): 42–49.	n=42	WEIRD: US
He BJ, Tong PJ, Li J et al (2013) Auricular acupressure for analgesia in perioperative period of total knee arthroplasty. Pain Med 14(10): 1608–13.	n=90	Non-WEIRD: China
Holger C, Romy L, Jost L et al (2012) Efficacy of preoperative hypnosis in breast cancer surgery - a systematic review and meta-analysis: Poster Presentation. Eur J Integrat Med 4(Supplement 1): 127.	Not able to access article	Not able to access article
Johansson K, Nuutila L, Virtanen H et al (2005) Preoperative education for orthopaedic patients: systematic review. J Adv Nurs 50(2): 212–23.	n=1,044	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Taiwan n=60
Johnson MI, Paley CA, Howe TE et al (2015) Transcutaneous electrical nerve stimulation for acute pain. Cochrane Database Syst Rev 6: CD006142.	n=1,734	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Hong Kong n=19 Non-WEIRD: Brazil n=72 Non-WEIRD: Turkey n=179 Non-WEIRD: South Korea n=100 Non-WEIRD: Taiwan n=30

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Kohl A, Rief W & Glombiewski JA (2012) How effective are acceptance strategies? A meta-analytic review of experimental results. J Behav Ther Exp Psychiatry 43(4): 988–1001.	n=2,085	WEIRD: N,W,S Europe WEIRD: US Almost all the "student participants are from the US)
Kola S, Walsh JC, Hughes BM et al (2013) Matching intra-procedural information with coping style reduces psychophysiological arousal in women undergoing colposcopy. J Behav Med 36(4): 401–12.	n=117,	WEIRD: N,W,S Europe
Koranyi S, Barth J, Trelle S et al (2014) Psychological interventions for acute pain after open heart surgery. Cochrane Database Syst Rev 5: CD009984.	n=2,164	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: South Africa n=50 Non-WEIRD: Lebanon n=110 Non-WEIRD: China n=153 Non-WEIRD: Iran n=222 Non-WEIRD: Taiwan n=60 Non-WEIRD: Thailand n=120
Kreindler G, Attias S, Kreindler A et al (2014) Treating postlaparoscopic surgery shoulder pain with acupuncture. Evid Based Complement Alternat Med 2014: 120486.	n=25	Non-WEIRD: Israel n=25
Krupat E, Fancey M & Cleary PD (2000) Information and its impact on satisfaction among surgical patients. Soc Sci Med 51(12): 1817–25.	n=3,602	WEIRD: US

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
LaMontagne LL, Hepworth JT, Cohen F et al (2003) Cognitive-behavioral intervention effects on adolescents' anxiety and pain following spinal fusion surgery. Nurs Res 52(3): 183–90.	n=109	WEIRD: US
Leegwater NC, Willems JH, Brohet R et al (2012) Cryocompression therapy after elective arthroplasty of the hip. Hip Int 22(5): 527–33.	n=30	WEIRD: N,W,S Europe
Logan HL, Baron RS & Kohout F (1995) Sensory focus as therapeutic treatments for acute pain. Psychosom Med 57(5): 475–84.	n=330	WEIRD: US
Louw A, Diener I, Butler DS et al (2013) Preoperative education addressing postoperative pain in total joint arthroplasty: review of content and educational delivery methods. Physiother Theory Pract 29(3): 175–94.	n=1,021	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Turkey n=60 Non-WEIRD: Belgrade n=45
Luebbert K, Dahme B & Hasenbring M (2001) The effectiveness of relaxation training in reducing treatment-related symptoms and improving emotional adjustment in acute non-surgical cancer treatment: a meta-analytical review. Psychooncology 10(6): 490–502.	n=742	WEIRD: N,W,S Europe WEIRD: US
Madden K, Middleton P, Cyna AM et al (2012) Hypnosis for pain management during labour and childbirth. Cochrane Database Syst Rev 11: CD009356.	n=1,213	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
McCracken LM, Gauntlett-Gilbert J & Vowles KE (2007) The role of mindfulness in a contextual cognitive-behavioral analysis of chronic pain-related suffering and disability. Pain 131(1–2): 63–69.	n=105	WEIRD: N,W,S Europe
Miro J & Raich RM (1999) Effects of a brief and economical intervention in preparing patients for surgery: does coping style matter? Pain 83(3): 471–75.	n=92	WEIRD: N,W,S Europe
Mitchinson AR, Kim HM, Rosenberg JM et al (2007) Acute postoperative pain management using massage as an adjuvant therapy: a randomized trial. Arch Surg 142(12): 1158–67.	n=605	WEIRD: US
Nelson EA, Dowsey MM, Knowles SR et al (2013) Systematic review of the efficacy of pre-surgical mind-body based therapies on post-operative outcome measures. Complement Ther Med 21(6): 697–711.	n=1,297	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Taiwan: n=93
Parthasarathy S & Ravishankar M (2009) Acupuncture - A preemptive analgesic technique. J Anaesthesiol Clin Pharmacol 25(2): 214–16.	n=50	Non-WEIRD: India n=93
Pittler MH, Brown EM & Ernst E (2007) Static magnets for reducing pain: systematic review and meta-analysis of randomized trials. CMAJ 177(7): 736–42.	n=721	WEIRD: N,W,S Europe Non-WEIRD: Israel n=227
Proctor ML, Smith CA, Farquhar CM et al (2002) Transcutaneous electrical nerve stimulation and acupuncture for primary	n=164	WEIRD: US WEIRD: N,W,S Europe

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
dysmenorrhoea. Cochrane Database Syst Rev 1: CD002123.		
Riddle DL, Keefe FJ, Nay WT et al (2011) Pain coping skills training for patients with elevated pain catastrophizing who are scheduled for knee arthroplasty: a quasi-experimental study. Arch Phys Med Rehabil 92(6): 859–65.	n=40	WEIRD: US
Rubinstein SM, Terwee CB, Assendelft WJ et al (2012) Spinal manipulative therapy for acute low-back pain. Cochrane Database Syst Rev 9: CD008880.	n=2,674	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia
Smith CAL, K. M.; Collins, C. T.; Jones, L. (2012) Massage, reflexology and other manual methods for pain management in labour. Cochrane Database Syst Rev 2: CD009290.	n=1172	Non-WEIRD: Iran n=695 Non-WEIRD: Taiwan n=60 Non-WEIRD: Brazil n=46 WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia
Sugai DY, Deptula PL, Parsa AA et al (2013) The importance of communication in the management of postoperative pain. Hawaii J Med Public Health 72(6): 180–84.	n=135	WEIRD: US
Sullivan MJ, Adams H, Rhodenizer T et al (2006) A psychosocial risk factor--targeted intervention for the prevention of chronic pain and disability following whiplash injury. Phys Ther 86(1): 8–18.	n=60	WEIRD: US

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Taghavi R, Tabasi KT, Mogharabian N et al (2013) The effect of acupuncture on relieving pain after inguinal surgeries. Korean J Pain 26(1): 46–50.	n=90	Non-WEIRD: Iran n=90
Theunissen M, Peters ML, Bruce J et al (2012) Preoperative anxiety and catastrophizing: a systematic review and meta-analysis of the association with chronic postsurgical pain. Clin J Pain 28(9): 819–41.	Data included previously	Data included previously
Uman LS, Birnie KA, Noel M et al (2013) Psychological interventions for needle-related procedural pain and distress in children and adolescents. Cochrane Database Syst Rev 10: CD005179.	n=5550	Non-WEIRD: Turkey n=481 Non-WEIRD: Vietnam n=40 1Non-WEIRD: India n=335 Non-WEIRD: Iran n=202 Non-WEIRD: Kuwait n=100 Non-WEIRD: Israel n=207 Non-WEIRD: Brazil n=40 Non-WEIRD: Mexico n=40 Non-WEIRD: China n=200 WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US
Usichenko TI, Edinger H, Witstruck T et al (2008) Millimetre wave therapy for pain relief after total knee arthroplasty: a randomised controlled trial. Eur J Pain 12(5): 617–23.	n=80	WEIRD: N,W,S Europe
Walker BF, French SD, Grant W et al (2010) Combined chiropractic interventions for low-back pain. Cochrane Database Syst Rev 4: CD005427.	n=2,887	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US

Table 16 Domain: Non-pharmacological techniques (SASA Guidelines 2015)		
Ward U & Nilsson UG (2013) Acupuncture for postoperative pain in day surgery patients undergoing arthroscopic shoulder surgery. Clin Nurs Res 22(1): 130–36.	n=22	WEIRD: N,W,S Europe
Wetzel B, Pavlovic D, Kuse R et al (2011) The effect of auricular acupuncture on fentanyl requirement during hip arthroplasty: a randomized controlled trial. Clin J Pain 27(3): 262–67.	n=120	WEIRD: N,W,S Europe
Yu SY, Chen S, Yan HD et al (2015) Effect of cryotherapy after elbow arthrolysis: a prospective, single-blinded, randomized controlled study. Arch Phys Med Rehabil 96(1): 1–6.	n=59	Non-WEIRD: China
	Total n=39236(100%)	non-WEIRD: n=5989 (15.3%)

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Alfano G, Grieco M, Forino A et al (2011) Analgesia with paracetamol/tramadol vs. paracetamol/codeine in one day- surgery: a randomized open study. Eur Rev Med Pharmacol Sci 15(2): 205–10.	n=122	WEIRD: N,W,S Europe
Attal N, Gaude V, Brasseur L et al (2000) Intravenous lidocaine in central pain: a double-blind, placebo-controlled, psychophysical study. Neurology 54(3): 564–74.	n=16,	WEIRD: N,W,S Europe

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Attal N, Guirimand F, Brasseur L et al (2002) Effects of IV morphine in central pain: a randomized placebo-controlled study. Neurology 58(4): 554–63.	n=21	WEIRD: N,W,S Europe
Basurto Ona X, Rigau Comas D & Urrutia G (2013a) Opioids for acute pancreatitis pain. Cochrane Database Syst Rev 7: CD009179.	n=227	WEIRD: N,W,S Europe + US
Basurto Ona X, Uriona Tuma SM, Martinez Garcia L et al (2013b) Drug therapy for preventing post-dural puncture headache. Cochrane Database Syst Rev 2: CD001792.	n=1,611	WEIRD: N,W,S Europe + US Non-WEIRD: Saudi Arabia n=50 Non-WEIRD: Iran n=670 Non-WEIRD: Turkey n=210 Non-WEIRD: Egypt n=95
Berry JD & Petersen KL (2005) A single dose of gabapentin reduces acute pain and allodynia in patients with herpes zoster. Neurology 65(3): 444–47.	n=26	WEIRD: US
Boonmak P & Boonmak S (2010) Epidural blood patching for preventing and treating post-dural puncture headache. Cochrane Database Syst Rev(1)	n=379	WEIRD: N,W,S Europe + US Non-WEIRD: Romania n=32
Bowsher D (1997) The effects of pre-emptive treatment of postherpetic neuralgia with amitriptyline: a randomized, double-blind, placebo-controlled trial. J Pain Symptom Manage 13(6): 327–31.	n=80	WEIRD: N,W,S Europe
Browne AL, Andrews R, Schug SA et al (2011) Persistent pain outcomes and patient satisfaction with pain management after burn injury. Clin J Pain 27(2): 136–45.	n=492	WEIRD: Australia

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Cardenas DD, Warms CA, Turner JA et al (2002) Efficacy of amitriptyline for relief of pain in spinal cord injury: results of a randomized controlled trial. Pain 96(3): 365–73.	n=84,	WEIRD: US
Choiniere M, Grenier R & Paquette C (1992) Patient-controlled analgesia: a double-blind study in burn patients. Anaesthesia 47(6): 467–72.	n=24,	WEIRD: US
Coffey F, Wright J, Hartshorn S et al (2014) STOP!: a randomised, double-blind, placebo-controlled study of the efficacy and safety of methoxyflurane for the treatment of acute pain. Emerg Med J 31(8): 613–18.	n=300	WEIRD: N,W,S Europe
Cohen AS, Burns B & Goadsby PJ (2009) High-flow oxygen for treatment of cluster headache: a randomized trial. JAMA 302(22): 2451–57.	n=109	WEIRD: US
Colli A, Conte D, Valle SD et al (2012) Meta-analysis: nonsteroidal anti-inflammatory drugs in biliary colic. Aliment Pharmacol Ther 35(12): 1370–78.	n=1,076	WEIRD: N,W,S Europe + US Non-WEIRD: UAE n=32 Non-WEIRD: Israel n=60 Non-WEIRD: India n=27
Colman I, Brown MD, Innes GD et al (2004) Parenteral metoclopramide for acute migraine: meta-analysis of randomised controlled trials. BMJ 329(7479): 1369–73.	n=655	WEIRD: N,W,S Europe + US Non-WEIRD: Argentina n=40

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Colman I, Brown MD, Innes GD et al (2005) Parenteral dihydroergotamine for acute migraine headache: a systematic review of the literature. Ann Emerg Med 45(4): 393–401.	n=384	WEIRD: N,W,S Europe + US
Coman M & Kelly A-M (1999) Safety of a nurse-managed, titrated analgesia protocol for the management of severe pain in the emergency department. Emerg Med Australas 11(3): 128–32.	n=401	WEIRD: Australia
Davies A, Buchanan A, Zeppetella G et al (2013) Breakthrough cancer pain: an observational study of 1000 European oncology patients. J Pain Symptom Manage 46(5): 619–28.	n=1,000	WEIRD: N,W,S Europe
De Benedittis G & Lorenzetti A (1996) Topical aspirin/diethyl ether mixture versus indomethacin and diclofenac/ diethyl ether mixtures for acute herpetic neuralgia and postherpetic neuralgia: a double-blind crossover placebo-controlled study. Pain 65(1): 45–51.	n=37	WEIRD: N,W,S Europe
De Jonghe B, Bastuji-Garin S, Fangio P et al (2005) Sedation algorithm in critically ill patients without acute brain injury. Crit Care Med 33(1): 120–27.	n=102	WEIRD: N,W,S Europe
de Oliveira Ribeiro Mdo C, Pereira CU, Sallum AM et al (2013) Immediate post-craniotomy headache. Cephalalgia 33(11): 897–905.	n=91	Non-WEIRD: Brazil

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Derry S & Moore RA (2013a) Paracetamol (acetaminophen) with or without an antiemetic for acute migraine headaches in adults. Cochrane Database Syst Rev 4: CD008040.	n=2,942	WEIRD: N,W,S Europe Includes industry sponsor studies Non-WEIRD: Turkey n=229
Diener HC, Gold M & Hagen M (2014) Use of a fixed combination of acetylsalicylic acid, acetaminophen and caffeine compared with acetaminophen alone in episodic tension-type headache: meta-analysis of four randomized, double-blind, placebo-controlled, crossover studies. J Headache Pain 15: 76.	Industry sponsored locations not disclosed	Industry sponsored locations not disclosed
Dworkin RH, Barbano RL, Tyring SK et al (2009) A randomized, placebo-controlled trial of oxycodone and of gabapentin for acute pain in herpes zoster. Pain 142(3): 209–17.	n=87,	WEIRD: US
Everts B, Karlson BW, Herlitz J et al (1998) Morphine use and pharmacokinetics in patients with chest pain due to suspected or definite acute myocardial infarction. Eur J Pain 2(2): 115–25.	n=2988	WEIRD: N,W,S Europe
Finnerup NB, Biering-Sorensen F, Johannesen IL et al (2005a) Intravenous lidocaine relieves spinal cord injury pain: a randomized controlled trial. Anesthesiology 102(5): 1023–30.	n=24	WEIRD: N,W,S Europe
Gaukroger PB, Chapman MJ & Davey RB (1991) Pain control in paediatric burns--the use of patient-controlled analgesia. Burns 17(5): 396–99.	n=11	WEIRD: Australia

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Gerhardt RT, King KM & Wiegert RS (2001) Inhaled nitrous oxide versus placebo as an analgesic and anxiolytic adjunct to peripheral intravenous cannulation. Am J Emerg Med 19(6): 492–94.	n=11	WEIRD: US
Gramke HF, de Rijke JM, van Kleef M et al (2009) Predictive factors of postoperative pain after day-case surgery. Clin J Pain 25(6): 455–60.	n=648	WEIRD: N,W,S Europe
Green R, Bulloch B, Kabani A et al (2005) Early analgesia for children with acute abdominal pain. Pediatrics 116(4): 978–83.	n=108	WEIRD: US
Guilfoyle MR, Helmy A, Duane D et al (2013) Regional scalp block for postcraniotomy analgesia: a systematic review and meta-analysis. Anesth Analg 116(5): 1093–102.	n=325	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: India: n=40 Non-WEIRD: Egypt: n=80 Non-WEIRD: Thailand: n=60
Halpern S & Preston R (1994) Postdural puncture headache and spinal needle design. Metaanalyses. Anesthesiology 81(6): 1376–83.	n=3,593	WEIRD: US WEIRD: N,W,S Europe
Hansen MS, Brennum J, Moltke FB et al (2011) Pain treatment after craniotomy: where is the (procedure-specific) evidence? A qualitative systematic review. Eur J Anaesthesiol 28(12): 821–29.	n=519	Non-WEIRD: Thailand n=49 Non-WEIRD: Egypt: n=60 Non-WEIRD: India: n=40 WEIRD: N,W,S Europe WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Hassouneh B, Centofanti JE & Reddy K (2011) Pain management in post-craniotomy patients: a survey of canadian neurosurgeons. Can J Neurol Sci 38(3): 456–60	n=103	WEIRD: US
Henrikson CA, Howell EE, Bush DE et al (2003) Chest pain relief by nitroglycerin does not predict active coronary artery disease. Ann Intern Med 139(12): 979–86.	n=459	WEIRD: US
Holdgate A & Pollock T (2005b) Nonsteroidal anti-inflammatory drugs (NSAIDs) versus opioids for acute renal colic. Cochrane Database Syst Rev 2: CD004137.	n=1,613	Non-WEIRD: Kuwait: n=100 Non-WEIRD: India: n=114 Non-WEIRD: Turkey: n=40 WEIRD: Australia WEIRD: N,W,S Europe WEIRD: US
Hwang JY, Bang JS, Oh CW et al (2015) Effect of scalp blocks with levobupivacaine on recovery profiles after craniotomy for aneurysm clipping: a randomized, double-blind, and controlled study. World Neurosurg 83(1): 108–13.	n=52	Non-WEIRD: South Korea: n=52
Jandhyala R, Fullarton JR & Bennett MI (2013) Efficacy of rapid-onset oral fentanyl formulations vs. oral morphine for cancer-related breakthrough pain: a meta-analysis of comparative trials. J Pain Symptom Manage 46(4): 573–80	n=415	WEIRD: N,W,S Europe
Jellish WS, Leonetti JP, Sawicki K et al (2006) Morphine/ondansetron PCA for postoperative pain, nausea, and vomiting after skull base surgery. Otolaryngol Head Neck Surg 135(2): 175–81.	n=120	WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Jones SJ, Cormack J, Murphy MA et al (2009) Parecoxib for analgesia after craniotomy. Br J Anaesth 102(1): 76–79.	n=82	WEIRD: Australia
Jonsson A, Cassuto J & Hanson B (1991) Inhibition of burn pain by intravenous lignocaine infusion. Lancet 338(8760): 151–52.	n=7	WEIRD: N,W,S Europe
Kalso E, Tramer MR, McQuay HJ et al (1998) Systemic local-anaesthetic-type drugs in chronic pain: a systematic review. Eur J Pain 2(1): 3–14.	Data used previously	Data used previously
Kim K, Mishina M, Kokubo R et al (2013a) Ketamine for acute neuropathic pain in patients with spinal cord injury. J Clin Neurosci 20(6): 804–07.	n=13	Non-WEIRD: Japan: n=13
Laerum E, Ommundsen OE, Gronseth JE et al (1995) Oral diclofenac in the prophylactic treatment of recurrent renal colic. A double-blind comparison with placebo. Eur Urol 28(2): 108–11.	n=80	WEIRD: N,W,S Europe
Lamplot JD, Wagner ER & Manning DW (2014) Multimodal pain management in total knee arthroplasty: a prospective randomized controlled trial. J Arthroplasty 29(2): 329–34.	n=36	WEIRD: US
Lee SK, Lee JW & Choy WS (2013b) Is multimodal analgesia as effective as postoperative patient-controlled analgesia following upper extremity surgery? Orthop Traumatol Surg Res 99(8): 895–901.	n=61	Non-WEIRD: South Korea: n=61

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Linneman PK, Terry BE & Burd RS (2000) The efficacy and safety of fentanyl for the management of severe procedural pain in patients with burn injuries. J Burn Care Rehabil 21(6): 519–22.	n=55	WEIRD: US
Lipton RB, Stewart WF, Stone AM et al (2000) Stratified care vs step care strategies for migraine: the Disability in Strategies of Care (DISC) Study: A randomized trial. Jama 284(20): 2599–605.	n=835	WEIRD: US
Long TD, Cathers TA, Twillman R et al (2001) Morphine-Infused silver sulfadiazine (MISS) cream for burn analgesia: a pilot study. J Burn Care Rehabil 22(2): 118–23.	n=4	WEIRD: US
Mahar PD, Wasiak J, O'Loughlin CJ et al (2012) Frequency and use of pain assessment tools implemented in randomized controlled trials in the adult burns population: a systematic review. Burns 38(2): 147–54.	n≈800	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: China: n=42 Non-WEIRD: Iran n=44 Non-WEIRD: Turkey n=24
Majidinejad S, Esmailian M & Emadi M (2014) Comparison of Intravenous Ketamine with Morphine in Pain Relief of Long Bones Fractures: a Double Blind Randomized Clinical Trial. Emerg (Tehran) 2(2): 77–80.	n=126	Non-WEIRD: Iran n=126
Manterola C, Vial M, Moraga J et al (2011) Analgesia in patients with acute abdominal pain. Cochrane Database Syst Rev(1): CD005660.	n=922	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Iran n=71

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Marjoribanks J, Proctor M, Farquhar C et al (2010) Nonsteroidal anti-inflammatory drugs for dysmenorrhoea. Cochrane Database Syst Rev 1: CD001751.	n=5,165	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US Non-WEIRD: Niger n=60 Non-WEIRD: UAE n=60 Non-WEIRD: Brazil n=150 Non-WEIRD: Mexico n=220 Non-WEIRD: Argentina n=24
Mathiesen O, Dahl B, Thomsen BA et al (2013) A comprehensive multimodal pain treatment reduces opioid consumption after multilevel spine surgery. Eur Spine J 22(9): 2089–96.	n=41	WEIRD: N,W,S Europe
McGuinness SK, Wasiak J, Cleland H et al (2011) A systematic review of ketamine as an analgesic agent in adult burn injuries. Pain Med 12(10): 1551–58.	n=67	WEIRD: N,W,S Europe
Meine TJ, Roe MT, Chen AY et al (2005) Association of intravenous morphine use and outcomes in acute coronary syndromes: results from the CRUSADE Quality Improvement Initiative. Am Heart J 149(6): 1043–49.	n=57,039	WEIRD: US
Memis D, Inal MT, Kavalci G et al (2010) Intravenous paracetamol reduced the use of opioids, extubation time, and opioid-related adverse effects after major surgery in intensive care unit. J Crit Care 25(3): 458–62.	n=40	Non-WEIRD: Turkey n=40

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Mordhorst C, Latz B, Kerz T et al (2010) Prospective assessment of postoperative pain after craniotomy. J Neurosurg Anesthesiol 22(3): 202–06.	n=256	WEIRD: N,W,S Europe
Nicolodi M (1996) Differential sensitivity to morphine challenge in migraine sufferers and headache-exempt subjects. Cephalalgia 16(5): 297–304.	n=80	WEIRD: N,W,S Europe
Norambuena C, Yanez J, Flores V et al (2013) Oral ketamine and midazolam for pediatric burn patients: a prospective, randomized, double-blind study. J Pediatr Surg 48(3): 629–34.	n=60	Non-WEIRD: Chile n=60
Norrbrink C & Lundeberg T (2009) Tramadol in neuropathic pain after spinal cord injury: a randomized, double-blind, placebo-controlled trial. Clin J Pain 25(3): 177–84.	n=36	WEIRD: N,W,S Europe
O'Connor A, Schug SA & Cardwell H (2000) A comparison of the efficacy and safety of morphine and pethidine as analgesia for suspected renal colic in the emergency setting. J Accid Emerg Med 17(4): 261–64.	n=94	WEIRD: Australia
O'Leary U, Puglia C, Friehling TD et al (1987) Nitrous oxide anesthesia in patients with ischemic chest discomfort: effect on beta-endorphins. J Clin Pharmacol 27(12): 957–61.	n=12,	WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Ozkurt B, Cinar O, Cevik E et al (2012) Efficacy of high-flow oxygen therapy in all types of headache: a prospective, randomized, placebo-controlled trial. Am J Emerg Med 30(9): 1760–64.	n=204	Non-WEIRD: Turkey n=204
Paech MJ, Doherty DA, Christmas T et al (2011) The volume of blood for epidural blood patch in obstetrics: a randomized, blinded clinical trial. Anesth Analg 113(1): 126–33.	n=121	WEIRD: Australia
Palmer JD, Sparrow OC & Iannotti F (1994) Postoperative hematoma: a 5-year survey and identification of avoidable risk factors. Neurosurgery 35(6): 1061–64.	n=6,668	WEIRD: N,W,S Europe
Pasin L, Greco T, Feltracco P et al (2013) Dexmedetomidine as a sedative agent in critically ill patients: a meta-analysis of randomized controlled trials. PLoS One 8(12): e82913.	n=3,648	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US Non-WEIRD: Malaysia n=28 Non-WEIRD: Egypt n=110 Non-WEIRD: Turkey n=220 Non-WEIRD: Japan n=32 Non-WEIRD: China n=273
Patanwala AE, Keim SM & Erstad BL (2010) Intravenous opioids for severe acute pain in the emergency department. Ann Pharmacother 44(11): 1800–09.	n=2,095	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Turkey n=68
Patterson DR, Ptacek JT, Carrougher GJ et al (1997) Lorazepam as an adjunct to opioid analgesics in the treatment of burn pain. Pain 72(3): 367–74	n=79,	WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Proctor ML & Murphy PA (2001) Herbal and dietary therapies for primary and secondary dysmenorrhoea. Cochrane Database Syst Rev 3: CD002124.	n=815	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: India n=556 Non-WEIRD: Japan n=40 Non-WEIRD: Venezuela n=50
Puntillo KA, Stannard D, Miaskowski C et al (2002) Use of a pain assessment and intervention notation (P.A.I.N.) tool in critical care nursing practice: nurses' evaluations. Heart Lung 31(4): 303–14.	n=11	WEIRD: US
Rabbie R, Derry S & Moore RA (2013) Ibuprofen with or without an antiemetic for acute migraine headaches in adults. Cochrane Database Syst Rev 4: CD008039.	n=4,473	WEIRD: N,W,S Europe WEIRD: Australia WEIRD: US Non-WEIRD: India n=279
Radbruch L, Trottenberg P, Elsner F et al (2011) Systematic review of the role of alternative application routes for opioid treatment for moderate to severe cancer pain: an EPCRC opioid guidelines project. Palliat Med 25(5): 578–96.	n=674	WEIRD: N,W,S Europe WEIRD: US
Rafiq S, Steinbruchel DA, Wanscher MJ et al (2014) Multimodal analgesia versus traditional opiate based analgesia after cardiac surgery, a randomized controlled trial. J Cardiothorac Surg 9: 52.	n=180	WEIRD: N,W,S Europe
Rahimi SY, Alleyne CH, Vernier E et al (2010) Postoperative pain management with tramadol after craniotomy: evaluation and cost analysis. J Neurosurg 112(2): 268–72.	n=50	WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Ranji SR, Goldman LE, Simel DL et al (2006) Do opiates affect the clinical evaluation of patients with acute abdominal pain? JAMA 296(14): 1764–74.	Data used previously	Data used previously
Roberto G, Raschi E, Piccinni C et al (2015) Adverse cardiovascular events associated with triptans and ergotamines for treatment of migraine: systematic review of observational studies. Cephalalgia 35(2): 118–31.	n≈131,000	WEIRD: US WEIRD: N,W,S Europe
Rocha-Filho PA, Gherpelli JL, de Siqueira JT et al (2008) Post-craniotomy headache: characteristics, behaviour and effect on quality of life in patients operated for treatment of supratentorial intracranial aneurysms. Cephalalgia 28(1): 41–48.	n=79	Non-WEIRD: Brazil n=150
Ruepert L, Quartero AO, de Wit NJ et al (2011) Bulking agents, antispasmodics and antidepressants for the treatment of irritable bowel syndrome. Cochrane Database Syst Rev 8: CD003460.	n=1,392	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Mexico n=40 Non-WEIRD: China n=160 Non-WEIRD: India n=266 Non-WEIRD: Taiwan n=110 Non-WEIRD: Argentina n=85
Sheridan DC, Spiro DM, Nguyen T et al (2012) Low-dose propofol for the abortive treatment of pediatric migraine in the emergency department. Pediatr Emerg Care 28(12): 1293–96.	n=239	WEIRD: US

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Siddall PJ, Taylor DA, McClelland JM et al (1999) Pain report and the relationship of pain to physical factors in the first 6 months following spinal cord injury. Pain 81(1-2): 187–97.	n=100	WEIRD: Australia
Sim KM, Hwang NC, Chan YW et al (1996) Use of patient-controlled analgesia with alfentanil for burns dressing procedures: a preliminary report of five patients. Burns 22(3): 238–41.	n=5	Non-WEIRD: Singapore: n=5
Song SW, Kim K, Rhee JE et al (2012) Butylscopolammonium bromide does not provide additional analgesia when combined with morphine and ketorolac for acute renal colic. Emerg Med Australas 24(2): 144–50.	n=89	Non-WEIRD: South Korea: n=5
Spies C, Macguill M, Heymann A et al (2011) A prospective, randomized, double-blind, multicenter study comparing remifentanil with fentanyl in mechanically ventilated patients. Intensive Care Med 37(3): 469–76.	n=60	WEIRD: N,W,S Europe
Sudheer PS, Logan SW, Terblanche C et al (2007) Comparison of the analgesic efficacy and respiratory effects of morphine, tramadol and codeine after craniotomy. Anaesthesia 62(6): 555–60.	n=60	WEIRD: N,W,S Europe
Tan JA & Ho KM (2009) Use of remifentanil as a sedative agent in critically ill adult patients: a meta-analysis. Anaesthesia	n=1,067	WEIRD: N,W,S Europe Non-WEIRD: Tunisia n=19 Non-WEIRD: Thailand n=152 Industry sponsored

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Teasell RW, Mehta S, Aubut JA et al (2010) A systematic review of pharmacologic treatments of pain after spinal cord injury. Arch Phys Med Rehabil 91(5): 816–31.	n=785	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Turkey n=20 Non-WEIRD: South Korea n=31
Thomas MC, Musselman ME & Shewmaker J (2014) Droperidol for the treatment of acute migraine headaches. Ann Pharmacother 49(2): 233–40.	n=685	WEIRD: N,W,S Europe WEIRD: US
Tramer MR, Williams JE, Carroll D et al (1998) Comparing analgesic efficacy of non-steroidal anti-inflammatory drugs given by different routes in acute and chronic pain: a qualitative systematic review. Acta Anaesthesiol Scand 42(1): 71–79.	n=2,225	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Israel n=56 Non-WEIRD: South Africa n=25 Non-WEIRD: Turkey n=20
Vergnion M, Degesves S, Garcet L et al (2001) Tramadol, an alternative to morphine for treating posttraumatic pain in the prehospital situation. Anesth Analg 92(6): 1543–46.	n=105	WEIRD: N,W,S Europe
Vranken JH, Hollmann MW, van der Vegt MH et al (2011) Duloxetine in patients with central neuropathic pain caused by spinal cord injury or stroke: a randomized, double-blind, placebo-controlled trial. Pain 152(2): 267–73.	n=48	WEIRD: N,W,S Europe
Wasiak J, Mahar P, McGuinness SK et al (2012) Intravenous lidocaine for the treatment of background or procedural burn pain. Cochrane Database Syst Rev 6: CD005622.	Data used previously	Data used previously

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Weinman D, Nicastro O, Akala O et al (2014) Parenteral treatment of episodic tension-type headache: a systematic review. Headache 54(2): 260–68.	n=486	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Brazil n=60 Non-WEIRD: Turkey n=140
White PF, Tang J, Wender RH et al (2011) The effects of oral ibuprofen and celecoxib in preventing pain, improving recovery outcomes and patient satisfaction after ambulatory surgery. Anesth Analg 112(2): 323–29.	n=180	WEIRD: US
Williams DL, Pemberton E & Leslie K (2011) Effect of intravenous parecoxib on post-craniotomy pain. Br J Anaesth 107(3): 398–403.	n=100	WEIRD: Australia
Wood MJ, Johnson RW, McKendrick MW et al (1994) A randomized trial of acyclovir for 7 days or 21 days with and without prednisolone for treatment of acute herpes zoster. N Engl J Med 330(13): 896–900.	n=400	WEIRD: N,W,S Europe
Wu YW, Hui YL & Tan PP (1994) Experience of epidural blood patch for post-dural puncture headache. Acta Anaesthesiol Sin 32(2): 137–40.	n=159	Non-WEIRD: Taiwan
Zech DF, Grond S, Lynch J et al (1995) Validation of World Health Organization Guidelines for cancer pain relief: a 10- year prospective study. Pain 63(1): 65–76.	n=401	WEIRD: N,W,S Europe

Table 17 Domain: Management of acute pain in specific scenarios (SASA Guidelines 2015)

Zeppetella G & Davies AN (2013) Opioids for the management of breakthrough pain in cancer patients. Cochrane Database Syst Rev 10: CD004311.	Article has been withdrawn	Article has been withdrawn
	Total n=245849(100%)	WEIRD: n=6529 (3%)

Table 18 Domain: Acute pain in patients with HIV (SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Balderson BH, Grothaus L, Harrison RG et al (2013) Chronic illness burden and quality of life in an aging HIV population. AIDS Care 25(4): 451–58.	n=452	WEIRD: US
Derry S, Sven-Rice A, Cole P et al (2013c) Topical capsaicin (high concentration) for chronic neuropathic pain in adults. Cochrane Database Syst Rev 2: CD007393.	n=801	WEIRD: N,W,S Europe WEIRD: US
Ebirim LN & Otokwala JG (2013) Inadequate pain relief in ambulatory patients with human immunodeficiency virus disease in Port Harcourt. HIV AIDS (Auckl) 5: 199–203.	n=157	Non-WEIRD: Nigeria: n=157
Frich LM & Borgbjerg FM (2000) Pain and pain treatment in AIDS patients: a longitudinal study. J Pain Symptom Manage 19(5): 339–47.	n=95	WEIRD: US

Table 18 Domain: Acute pain in patients with HIV (SASA Guidelines 2015)		
Hewitt DJ, McDonald M, Portenoy RK et al (1997) Pain syndromes and etiologies in ambulatory AIDS patients. Pain 70(2-3): 117–23.	n=151	WEIRD: US
Kaplan R, Slywka J, Slagle S et al (2000) A titrated morphine analgesic regimen comparing substance users and non-users with AIDS-related pain. J Pain Symptom Manage 19(4): 265–73.	n=44	WEIRD: US
Kimball LR & McCormick WC (1996) The pharmacologic management of pain and discomfort in persons with AIDS near the end of life: use of opioid analgesia in the hospice setting. J Pain Symptom Manage 11(2): 88–94.	n=185	WEIRD: US
Namisango E, Harding R, Atuhaire L et al (2012) Pain among ambulatory HIV/AIDS patients: multicenter study of prevalence, intensity, associated factors, and effect. J Pain 13(7): 704–13.	n=202	Non-WEIRD: Uganda
Olkkola KT, Palkama VJ & Neuvonen PJ (1999) Ritonavir's role in reducing fentanyl clearance and prolonging its half- life. Anesthesiology 91(3): 681–85.	n=12,	WEIRD: N,W,S Europe
Passik SD, Kirsh KL, Donaghy KB et al (2006) Pain and aberrant drug-related behaviors in medically ill patients with and without histories of substance abuse. Clin J Pain 22(2): 173–81.	n=173	WEIRD: US
Tsao JC, Stein JA & Dobalian A (2007) Pain, problem drug use history, and aberrant analgesic use behaviors in	n=2267	WEIRD: US

Table 18 Domain: Acute pain in patients with HIV (SASA Guidelines 2015)		
persons living with HIV. Pain 133(1-3): 128–37.		
Vogl D, Rosenfeld B, Breitbart W et al (1999) Symptom prevalence, characteristics, and distress in AIDS outpatients. J Pain Symptom Manage 18(4): 253–62.	n=504	WEIRD: US
	Total n=5043(100%)	non-WEIRD: n=359(7.1%)

Table 19 Domain: Locally and regionally administered analgesic drugs (SASA Guidelines 2015)		
Studies:	Population data set:	Category:
Abdallah FW, Morgan PJ, Cil T et al (2014b) Ultrasound-guided multilevel paravertebral blocks and total intravenous anesthesia improve the quality of recovery after ambulatory breast tumor resection. Anesthesiology 120(3): 703–13.	n=64,	WEIRD: US
Abrahams MS, Aziz MF, Fu RF et al (2009) Ultrasound guidance compared with electrical neurostimulation for peripheral nerve block: a systematic review and meta-analysis of randomized controlled trials. Br J Anaesth 102(3): 408–17.	n=941	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: UAE n=59 Non-WEIRD: South Africa n=46 Non-WEIRD: Taiwan n=90

Andersen LO & Kehlet H (2014) Analgesic efficacy of local infiltration analgesia in hip and knee arthroplasty: a systematic review. Br J Anaesth 113(3): 360–74.	n=1,644	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: China n=160 Non-WEIRD: South Korea n=87 Non-WEIRD: Thailand n=57
Ashraf A, Raut VV, Canty SJ et al (2013) Pain control after primary total knee replacement. A prospective randomised controlled trial of local infiltration versus single shot femoral nerve block. Knee 20(5): 324–27.	n=50	WEIRD: N,W,S Europe
Bailie DS & Ellenbecker TS (2009) Severe chondrolysis after shoulder arthroscopy: a case series. J Shoulder Elbow Surg 18(5): 742–47.	n=23	WEIRD: US
Barrington MJ & Kluger R (2013) Ultrasound guidance reduces the risk of local anesthetic systemic toxicity following peripheral nerve blockade. Reg Anesth Pain Med 38(4): 289–97.	Data used previously	Data used previously
Bingham AE, Fu R, Horn JL et al (2012) Continuous peripheral nerve block compared with single-injection peripheral nerve block: a systematic review and meta-analysis of randomized controlled trials. Reg Anesth Pain Med 37(6): 583–94.	n=702	WEIRD: N,W,S Europe WEIRD: US

Boddy AP, Mehta S & Rhodes M (2006) The effect of intraperitoneal local anesthesia in laparoscopic cholecystectomy: a systematic review and meta-analysis. Anesth Analg 103(3): 682–88.	n=1,256	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Croatia n=80 Non-WEIRD: Mexico n=100 Non-WEIRD: Tunisia n=40 Non-WEIRD: Israel n=51 Non-WEIRD: South Korea n=45 Non-WEIRD: Thailand n=80 Non-WEIRD: Turkey n=30 Non-WEIRD: Estonia n=40 Non-Weird: Egypt n=40
Briggs M & Nelson EA (2003) Topical agents or dressings for pain in venous leg ulcers. Cochrane Database Syst Rev 1: CD001177.	n=343	WEIRD: N,W,S Europe WEIRD: US
Chelly JE & Schilling D (2008a) Thromboprophylaxis and peripheral nerve blocks in patients undergoing joint arthroplasty. J Arthroplasty 23(3): 350–54.	n=6,935	WEIRD: US
Chelly JE, Szczodry DM & Neumann KJ (2008b) International normalized ratio and prothrombin time values before the removal of a lumbar plexus catheter in patients receiving warfarin after total hip replacement. Br J Anaesth 101(2): 250–54.	n=670	WEIRD: US
Davies RG, Myles PS & Graham JM (2006) A comparison of the analgesic efficacy and side-effects of paravertebral vs epidural blockade for thoracotomy--a systematic review and meta-analysis of randomized trials. Br J Anaesth 96(4): 418–26.	n=520	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: India n=30 Non-WEIRD: Egypt n=50 Non-WEIRD: Taiwan n=90

Gelfand HJ, Ouanes JP, Lesley MR et al (2011) Analgesic efficacy of ultrasound-guided regional anesthesia: a meta-analysis. J Clin Anesth 23(2): 90–96.	Data used previously	Data used previously
Grainger J & Saravanappa N (2008) Local anaesthetic for post-tonsillectomy pain: a systematic review and meta-analysis. Clin Otolaryngol 33(5): 411–19.	n=777	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Turkey n=166 Non-WEIRD: Lebanon n=90
Grevstad U, Mathiesen O, Lind T et al (2014) Effect of adductor canal block on pain in patients with severe pain after total knee arthroplasty: a randomized study with individual patient analysis. Br J Anaesth 112(5): 912–19.	n=50	WEIRD: N,W,S Europe
Hansen BP, Beck CL, Beck EP et al (2007) Postarthroscopic glenohumeral chondrolysis. Am J Sports Med 35(10): 1628–34.	n=187	WEIRD: US
Hanson NA, Allen CJ, Hostetter LS et al (2014) Continuous ultrasound-guided adductor canal block for total knee arthroplasty: a randomized, double-blind trial. Anesth Analg 118(6): 1370–77.	n=80	WEIRD: US
Idestrup C, Sawhney M, Nix C et al (2014) The incidence of hematoma formation in patients with continuous femoral catheters following total knee arthroplasty while receiving rivaroxaban as thromboprophylaxis: an observational study. Reg Anesth Pain Med 39(5): 414–17.	n=504	WEIRD: US

Jacob AK, Mantilla CB, Sviggum HP et al (2011a) Perioperative nerve injury after total hip arthroplasty: regional anesthesia risk during a 20-year cohort study. Anesthesiology 115(6): 1172–78.	n=12,998	WEIRD: US
Jacob AK, Mantilla CB, Sviggum HP et al (2011b) Perioperative nerve injury after total knee arthroplasty: regional anesthesia risk during a 20-year cohort study. Anesthesiology 114(2): 311–17.	n=12,329	WEIRD: US
Kim DH, Lin Y, Goytizolo EA et al (2014) Adductor canal block versus femoral nerve block for total knee arthroplasty: a prospective, randomized, controlled trial. Anesthesiology 120(3): 540–50	n=93	WEIRD: US
Krobbuaban B, Diregpoke S, Prasan S et al (2011) Alcohol-based chlorhexidine vs. povidone iodine in reducing skin colonization prior to regional anesthesia procedures. J Med Assoc Thai 94(7): 807–12.	n=100	Non-Weird: Thailand
Liu SS, Richman JM, Thirlby RC et al (2006) Efficacy of continuous wound catheters delivering local anesthetic for postoperative analgesia: a quantitative and qualitative systematic review of randomized controlled trials. J Am Coll Surg 203(6): 914–32.	n=2,141	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Turkey n=70 Non-WEIRD: South Korea n=128 Non-WEIRD: Israel n=136 Non-Weird: Honk Kong n=44 Non-Weird: Singapore n=52

Long JB, Birmingham PK, De Oliveira GS, Jr. et al (2014) Transversus abdominis plane block in children: A multicenter safety analysis of 1994 cases from the PRAN (Pediatric Regional Anesthesia Network) database. Anesth Analg 119(2): 395–99.	n=1,994	WEIRD: US
McCartney CJ, Lin L & Shastri U (2010) Evidence basis for the use of ultrasound for upper-extremity blocks. Reg Anesth Pain Med 35(2 Suppl): S10–15.	Data used previously	Data used previously
Mishriky BM, George RB & Habib AS (2012) Transversus abdominis plane block for analgesia after Cesarean delivery: a systematic review and meta-analysis. Can J Anaesth 59(8): 766–78.	n=524	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Lebanon n=57 Non-WEIRD: Saudi Arabia n=40 Non-WEIRD: Singapore n=40 Non-WEIRD: Iran n=48
Orebaugh SL, Kentor ML & Williams BA (2012) Adverse outcomes associated with nerve stimulator-guided and ultrasound-guided peripheral nerve blocks by supervised trainees: update of a single-site database. Reg Anesth Pain Med 37(6): 577–82.	n=14,498	WEIRD: US
Paul JE, Arya A, Hurlburt L et al (2010) Femoral nerve block improves analgesia outcomes after total knee arthroplasty: a meta-analysis of randomized controlled trials. Anesthesiology 113(5): 1144–62.	n=1,016	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Singapore n=163 Non-WEIRD: Turkey n=30 Non-WEIRD: Thailand n=61
Raines S, Hedlund C, Franzon M et al (2014) Ropivacaine for continuous wound infusion for postoperative pain management: a systematic review and	Not able to access article	Not able to access article

meta-analysis of randomized controlled trials. Eur Surg Res 53(1-4): 43–60.		
Reinhardt KR, Duggal S, Umunna BP et al (2014) Intraarticular analgesia versus epidural plus femoral nerve block after TKA: a randomized, double-blind trial. Clin Orthop Relat Res 472(5): 1400–08.	n=603	WEIRD: N,W,S Europe WEIRD: US WEIRD: Australia Non-WEIRD: Israel n=40
Richman JM, Liu SS, Courpas G et al (2006) Does continuous peripheral nerve block provide superior pain control to opioids? A meta-analysis. Anesth Analg 102(1): 248–57.	n=603	WEIRD: N,W,S Europe
Rosseland LA (2005) No evidence for analgesic effect of intra-articular morphine after knee arthroscopy: a qualitative systematic review. Reg Anesth Pain Med 30(1): 83–98.	Not able to access article	Not able to access article
Salviz EA, Xu D, Frulla A et al (2013) Continuous interscalene block in patients having outpatient rotator cuff repair surgery: a prospective randomized trial. Anesth Analg 117(6): 1485–92.	n=71	WEIRD: US
Schnabel A, Reichl SU, Kranke P et al (2010) Efficacy and safety of paravertebral blocks in breast surgery: a meta- analysis of randomized controlled trials. Br J Anaesth 105(6): 842–52.	n=877	Non-WEIRD: Poland n=49 Non-WEIRD: Lebanon n=60 Non-WEIRD: Russia n=180 Non-WEIRD: Iran n=60 WEIRD: N,W,S Europe WEIRD: US

Schroeder KM, Jacobs RA, Guite C et al (2012) Use of a chlorhexidine-impregnated patch does not decrease the incidence of bacterial colonization of femoral nerve catheters: a randomized trial. Can J Anaesth 59(10): 950–57.	n=100	WEIRD: US
Sites BD, Taenzer AH, Herrick MD et al (2012) Incidence of local anesthetic systemic toxicity and postoperative neurologic symptoms associated with 12,668 ultrasound-guided nerve blocks: an analysis from a prospective clinical registry. Reg Anesth Pain Med 37(5): 478–82.	n=12,668	WEIRD: US
Sviggum HP, Jacob AK, Mantilla CB et al (2012) Perioperative nerve injury after total shoulder arthroplasty: assessment of risk after regional anesthesia. Reg Anesth Pain Med 37(5): 490–94.	n=1569	WEIRD: US
	Total n=76930	Non-WEIRD n=2789

Table 20 Domain: Outcome measures of acute pain (SASA Guidelines 2015)

Studies:	Population data set:	Category:
Collins SL, Edwards J, Moore RA et al (2001) Seeking a simple measure of analgesia for mega-trials: is a single global assessment good enough? Pain 91(1-2): 189–94.	Majority of data from unpublished sources (6/11 meta reviews)	Majority of data from unpublished sources (6/11 meta reviews)

Barden J, Edwards JE, McQuay HJ et al (2004) Pain and analgesic response after third molar extraction and other postsurgical pain. Pain 107(1-2): 86–90.	Used data from above reference	Used data from above reference
McQuay HJ, Poon KH, Derry S et al (2008) Acute pain: combination treatments and how we measure their efficacy. Br J Anaesth 101(1): 69–76.	n=1,217	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Kuwait n=37 Non-WEIRD: India n=550 Non-WEIRD: Turkey n=240
Garratt AM, Klaber Moffett J & Farrin AJ (2001) Responsiveness of generic and specific measures of health outcome in low back pain. Spine 26(1): 71–77.	n=187	WEIRD: N,W,S Europe
	Total n=1404	Non-WEIRD n=827

Table 21 Domain: Measurement and assessment of acute pain(SASA Guidelines 2015)

Referenced Studies:	Population data set:	Category:
Aubrun F, Langeron O, Quesnel C et al (2003) Relationships between measurement of pain using visual analog score and morphine requirements during postoperative intravenous morphine titration. Anesthesiology 98(6): 1415–21.	n=3,045	WEIRD: N,W,S Europe
Breivik EK, Bjornsson GA & Skovlund E (2000) A comparison of pain rating scales by sampling from clinical trial data. Clin J Pain 16(1): 22–28.	n=63	WEIRD: N,W,S Europe
Erdek MA & Pronovost PJ (2004) Improving assessment and treatment of pain in the critically ill. Int J Qual Health Care 16(1): 59–64.	“nursing intervals” was the unit of measurement, total	“nursing intervals” was the unit of measurement, total number of ICU patients not document

Table 21 Domain: Measurement and assessment of acute pain(SASA Guidelines 2015)

	number of ICU patients not document	
Gould TH, Crosby DL, Harmer M et al (1992) Policy for controlling pain after surgery: effect of sequential changes in management. BMJ 305(6863): 1187–93.	n=2035	WEIRD: N,W,S Europe
Hartrick CT, Kovan JP & Shapiro S (2003) The numeric rating scale for clinical pain measurement: a ratio measure? Pain Practice 3(4): 310–16.	n=222	WEIRD:US
Hjermstad MJ, Fayers PM, Haugen DF et al (2011) Studies comparing numerical rating scales, verbal rating scales, and visual analogue scales for assessment of pain intensity in adults: a systematic literature review. J Pain Symptom Manage 41(6): 1073–93.	n=10,806	WEIRD: N,W,S Europe + US WEIRD: Australia Non-WEIRD: Nigeria n=137 Non-WEIRD: Brazil n=91 Non-WEIRD: China n=173
Jensen MP, Chen C & Brugger AM (2002) Postsurgical pain outcome assessment. Pain 99(1-2): 101–09.	n=123	WEIRD: US
Myles PS & Urquhart N (2005) The linearity of the visual analogue scale in patients with severe acute pain. Anaesth Intensive Care 33(1): 54–58.	n=22	WEIRD: Australia
van Dijk JF, Kappen TH, van Wijck AJ et al (2012a) The diagnostic value of the numeric pain rating scale in older postoperative patients. J Clin Nurs 21(21-22): 3018–24.	n=2,674	WEIRD: N,W,S Europe

Table 21 Domain: Measurement and assessment of acute pain(SASA Guidelines 2015)

van Dijk JF, van Wijck AJ, Kappen TH et al (2012b) Postoperative pain assessment based on numeric ratings is not the same for patients and professionals: a cross-sectional study. Int J Nurs Stud 49(1): 65–71.	n=10,434	WEIRD: N,W,S Europe
Victor TW, Jensen MP, Gammaitoni AR et al (2008) The dimensions of pain quality: factor analysis of the Pain Quality Assessment Scale. Clin J Pain 24(6): 550–55.	n=961	WEIRD: US
	Total n=30385(100%)	non-WEIRD: n=401 (1%)

Table 22 Domain: Paracetamol (SASA Guidelines 2015)

Studies:	Population data set:	Category:
Apfel CC, Turan A, Souza K et al (2013) Intravenous acetaminophen reduces postoperative nausea and vomiting: a systematic review and meta-analysis. Pain 154(5): 677–89.	n=2,364	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Turkey n=603 Non-WEIRD: Egypt n=76 Non-WEIRD: Kuwait n=20 Non-WEIRD: South Korea n=298 Non-WEIRD: Russia n=49
Dart RC & Bailey E (2007) Does therapeutic use of acetaminophen cause acute liver failure? Pharmacotherapy 27(9): 1219–30.	n=1,830	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Egypt n=50

Green JL, Heard KJ, Reynolds KM et al (2013) Oral and intravenous acetylcysteine for treatment of acetaminophen toxicity: a systematic review and meta-analysis. West J Emerg Med 14(3): 218–26.	n=5,164	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Hong Kong n=224 Non-WEIRD: Taiwan n=102
Jebaraj B, Maitra S, Baidya DK et al (2013) Intravenous paracetamol reduces postoperative opioid consumption after orthopedic surgery: a systematic review of clinical trials. Pain Res Treat 2013: 402510.	Data previously included	Data previously included
Lavonas EJ, Reynolds KM & Dart RC (2010) Therapeutic acetaminophen is not associated with liver injury in children: a systematic review. Pediatrics 126(6): e1430–44.	Not able to access article (2007 online subscription)	Not able to access article (2007 online subscription)
Marzilawati AR, Ngau YY & Mahadeva S (2012) Low rates of hepatotoxicity among Asian patients with paracetamol overdose: a review of 1024 cases. BMC Pharmacol Toxicol 13(1): 8.	n=1,024	Non-WEIRD: Malaysia
Ong CK, Seymour RA, Lirk P et al (2010) Combining paracetamol (acetaminophen) with nonsteroidal antiinflammatory drugs: a qualitative systematic review of analgesic efficacy for acute postoperative pain. Anesth Analg 110(4): 1170–79.	n=1,909	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Saudi Arabia n=108 Non-WEIRD: Lebanon n=80
Tzortzopoulou A, McNicol ED, Cepeda MS et al (2011) Single dose intravenous propacetamol or intravenous paracetamol for postoperative pain. Cochrane Database Syst Rev 10: CD007126.	n=3,896	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Turkey n=130 Non-WEIRD: Egypt n=76 Non-WEIRD: Russia n=45 Non-WEIRD: Iran n=30 Non-WEIRD: China n=40 Non-WEIRD: Lebanon n=80

	Total n=16187	Non-WEIRD n=2011

Table 23 Domain: Nonsteroidal anti-inflammatory (SASA Guidelines 2015)

Studies:	Population data set:	Category:
Anglin R, Yuan Y, Moayyedi P et al (2014) Risk of upper gastrointestinal bleeding with selective serotonin reuptake inhibitors with or without concurrent nonsteroidal anti-inflammatory use: a systematic review and meta-analysis. Am J Gastroenterol 109(6): 811–19.	n=393,268	WEIRD: US WEIRD: N,W,S Europe
Bhala N, Emberson J, Merhi A et al (2013) Vascular and upper gastrointestinal effects of non-steroidal anti-inflammatory drugs: meta-analyses of individual participant data from randomised trials. Lancet 382(9894): 769–79.	"Individual participant data from trials of valdecoxib (Pfizer) were requested but not provided, although aggregate data from these trials were included in our analyses. Plus unpublished data used."	"Individual participant data from trials of valdecoxib (Pfizer) were requested but not provided, although aggregate data from these trials were included in our analyses. Plus unpublished data used."
Bhangu A, Singh P, Fitzgerald JE et al (2014) Postoperative nonsteroidal anti-inflammatory drugs and risk of anastomotic leak: meta-analysis of clinical and experimental studies. World J Surg 38(9): 2247–57.	n=4,464	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Taiwan n=181 Non-WEIRD: Singapore n=79
Curtis SP, Ng J, Yu Q et al (2004) Renal effects of etoricoxib and comparator nonsteroidal anti-inflammatory drugs in controlled clinical trials. Clin Ther 26(1): 70–83.	n=4,770	WEIRD: US WEIRD: N,W,S Europe

Dib RA, Chinzon D, Fontes LH et al (2014) Ulcer and bleeding complications and their relationship with dyspeptic symptoms in NSAIDs users: a transversal multicenter study. Scand J Gastroenterol 49(7): 785–89.	n=1213	Non-WEIRD: Brazil
Dodwell ER, Latorre JG, Parisini E et al (2010) NSAID exposure and risk of nonunion: a meta-analysis of case-control and cohort studies. Calcif Tissue Int 87(3): 193–202.	n=12,051	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Philipines n=273 Non-WEIRD: South Korea n=88
Elia N, Lysakowski C & Tramer MR (2005) Does multimodal analgesia with acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors and patient-controlled analgesia morphine offer advantages over morphine alone? Meta-analyses of randomized trials. Anesthesiology 103(6): 1296–304.	Data included previously	Data included previously
Fournier JP, Sommet A, Durrieu G et al (2014) Drug interactions between antihypertensive drugs and non-steroidal anti-inflammatory agents: a descriptive study using the French Pharmacovigilance database. Fundam Clin Pharmacol 28(2): 230–35	n=517	WEIRD: N,W,S Europe
Fransen M, Anderson C, Douglas J et al (2006) Safety and efficacy of routine postoperative ibuprofen for pain and disability related to ectopic bone formation after hip replacement surgery (HIPAID): randomised controlled trial. BMJ 333(7567): 519.	n=902	WEIRD: Australia

Furberg CD, Psaty BM & FitzGerald GA (2005) Parecoxib, valdecoxib, and cardiovascular risk. Circulation 111(3): 249.	n=2,098	WEIRD: US
Gobble RM, Hoang HL, Kachniarz B et al (2014) Ketorolac does not increase perioperative bleeding: a meta-analysis of randomized controlled trials. Plast Reconstr Surg 133(3): 741–55.	n=2,314	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Egypt n=90 Non-WEIRD: South Korea n=128
Grimsby GM, Andrews PE, Castle EP et al (2014) Long-term renal function after donor nephrectomy: secondary follow- up analysis of the randomized trial of ketorolac vs placebo. Urology 84(1): 78–81.	n=111	WEIRD: US
Horbach SJ, Lopes RD, da CGJC et al (2011) Naproxen as prophylaxis against atrial fibrillation after cardiac surgery: the NAFARM randomized trial. Am J Med 124(11): 1036–42.	n=161	Non-WEIRD: Brazil
Jarupongprapa S, Ussavasodhi P & Katchamart W (2013) Comparison of gastrointestinal adverse effects between cyclooxygenase-2 inhibitors and non-selective, non-steroidal anti-inflammatory drugs plus proton pump inhibitors: a systematic review and meta-analysis. J Gastroenterol 48(7): 830–38.	Data used previously	Data used previously
Jeffcoach DR, Sams VG, Lawson CM et al (2014) Nonsteroidal anti-inflammatory drugs' impact on nonunion and infection rates in long-bone fractures. J Trauma Acute Care Surg 76(3): 779–83.	n=1,901	WEIRD: US

Juhlin T, Bjorkman S & Hoglund P (2005) Cyclooxygenase inhibition causes marked impairment of renal function in elderly subjects treated with diuretics and ACE-inhibitors. Eur J Heart Fail 7(6): 1049–56.	n=14	WEIRD: N,W,S Europe
Lafrance JP & Miller DR (2009) Selective and non-selective non-steroidal anti-inflammatory drugs and the risk of acute kidney injury. Pharmacoepidemiol Drug Saf 18: 923–31.	n=1,459,271 Industry sponsor	WEIRD: US Industry sponsor
Lee A, Cooper MG, Craig JC et al (2007a) Effects of nonsteroidal anti-inflammatory drugs on postoperative renal function in adults with normal renal function. Cochrane Database Syst Rev 2: CD002765.	n=1,459	WEIRD: US WEIRD: N,W,S Europe WEIRD: Australia Non-WEIRD: Malaysia n=39
Li Q, Zhang Z & Cai Z (2011) High-dose ketorolac affects adult spinal fusion: a meta-analysis of the effect of perioperative nonsteroidal anti-inflammatory drugs on spinal fusion. Spine (Phila Pa 1976) 36(7): E461–68.	n=1,403	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: Japan n=273 Non-WEIRD: South Korea n=88
Lin J, Zhang L & Yang H (2013) Perioperative administration of selective cyclooxygenase-2 inhibitors for postoperative pain management in patients after total knee arthroplasty. J Arthroplasty 28(2): 207–13 e2.	n=571	WEIRD: US WEIRD: N,W,S Europe Non-WEIRD: China n=175 Non-WEIRD: Taiwan n=80
Liu SS, Bae JJ, Bieltz M et al (2012a) Association of perioperative use of nonsteroidal anti-inflammatory drugs with postoperative myocardial infarction after total joint replacement. Reg Anesth Pain Med 37(1): 45–50.	n=10,873	WEIRD: US

Moore RA, Derry S & McQuay HJ (2007) Cyclo-oxygenase-2 selective inhibitors and nonsteroidal anti-inflammatory drugs: balancing gastrointestinal and cardiovascular risk. BMC Musculoskelet Disord 8: 73.	Meta-analysis of meta-analysis	Meta-analysis of meta-analysis
Morales DR, Lipworth BJ, Guthrie B et al (2013) Safety risks for patients with aspirin-exacerbated respiratory disease after acute exposure to selective nonsteroidal anti-inflammatory drugs and COX-2 inhibitors: Meta-analysis of controlled clinical trials. J Allergy Clin Immunol 134(1): 40–45.	n=426	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Turkey n=44 Non-WEIRD: Egypt n=77 Non-WEIRD: Poland n=23 Non-WEIRD: Japan n=17
Pilotto A, Franceschi M, Leandro G et al (2003) The risk of upper gastrointestinal bleeding in elderly users of aspirin and other non-steroidal anti-inflammatory drugs: the role of gastroprotective drugs. Aging Clin Exp Res 15(6): 494–99.	n=467	WEIRD: N,W,S Europe
Polzin A, Zeus T, Schror K et al (2013) Dipyrone (metamizole) can nullify the antiplatelet effect of aspirin in patients with coronary artery disease. J Am Coll Cardiol 62(18): 1725–26.	n=66	WEIRD: N,W,S Europe
Puolakka PA, Rintala S, Yli-Hankala A et al (2009) The effect of parecoxib on kidney function at laparoscopic hysterectomy. Ren Fail 31(4): 284–89.	n=30	WEIRD: N,W,S Europe

Riggin L, Ramakrishna J, Sommer DD et al (2013) A 2013 updated systematic review & meta-analysis of 36 randomized controlled trials; no apparent effects of non steroidal anti-inflammatory agents on the risk of bleeding after tonsillectomy. Clin Otolaryngol 38(2): 115–29.	n=4,878	WEIRD: N,W,S Europe WEIRD: US Non-WEIRD: Saudi Arabia n=180 Non-WEIRD: Turkey n=40 Non-WEIRD: Japan n=25
Saleh F, Jackson TD, Ambrosini L et al (2014) Perioperative nonselective non-steroidal anti-inflammatory drugs are not associated with anastomotic leakage after colorectal surgery. J Gastrointest Surg 18(8): 1398–404.	n=731	WEIRD: US
Schroer WC, Diesfeld PJ, LeMarr AR et al (2011) Benefits of prolonged postoperative cyclooxygenase-2 inhibitor administration on total knee arthroplasty recovery: a double-blind, placebo-controlled study. J Arthroplasty 26(6 Suppl): 2–7.	n=107	WEIRD: US
Schug SA, Joshi GP, Camu F et al (2009) Cardiovascular safety of the cyclooxygenase-2 selective inhibitors parecoxib and valdecoxib in the postoperative setting: an analysis of integrated data. Anesth Analg 108(1): 299–307.	Non-published data, industry studies	Non-published data, industry studies
Solomon SD, Wittes J, Finn PV et al (2008) Cardiovascular risk of celecoxib in 6 randomized placebo-controlled trials: the cross trial safety analysis. Circulation 117(16): 2104–13.	Non-published data, industry studies	Non-published data, industry studies

Solomon DH, Rassen JA, Glynn RJ et al (2010) The comparative safety of analgesics in older adults with arthritis. Arch Intern Med 170(22): 1968–76.	n=12,840	WEIRD: US
Subendran J, Siddiqui N, Victor JC et al (2014) NSAID use and anastomotic leaks following elective colorectal surgery: a matched case-control study. J Gastrointest Surg 18(8): 1391–97.	n=262	WEIRD: US
Targownik LE, Metge CJ, Leung S et al (2008) The relative efficacies of gastroprotective strategies in chronic users of nonsteroidal anti-inflammatory drugs. Gastroenterology 134(4): 937–44.	n=1382	WEIRD: US
Trelle S, Reichenbach S, Wandel S et al (2011) Cardiovascular safety of non-steroidal anti-inflammatory drugs: network meta-analysis. BMJ 342: c7086.	Uses non-published data and reports	Uses non-published data and reports
Yuhara H, Corley DA, Nakahara F et al (2014) Aspirin and non-aspirin NSAIDs increase risk of colonic diverticular bleeding: a systematic review and meta-analysis. J Gastroenterol 49(6): 992–1000.	n=52,000	WEIRD: US Non-WEIRD: Japan n=677
	Total n=1970124	Non-WEIRD n=5164

Appendix C: Instructions to authors

Excerpt from: https://sajaa.co.za/index.php/sajaa/about/submissions

"Author Guidelines

Submitted manuscripts that are not in the correct format and without the required supporting documentation specified in these guidelines will be returned to the author(s) for correction and will delay publication.

AUTHORSHIP

Named authors must consent to publication by signing a covering letter which should be submitted as a supplementary file. Authorship should be based on substantial contribution to:

(i) conception, design, analysis and interpretation of data;

(ii) drafting or critical revision for important intellectual content; and

(iii) approval of the version to be published. These conditions must all be met (uniform requirements for manuscripts submitted to biomedical journals; refer to www.icmje.org); and

(iv) exact contribution of each author must be stated.

DECLARATION OF CONFLICT OF INTEREST

Authors must declare all sources of support for the research and any association with a product or subject that may constitute a conflict of interest. If there is no conflict of interest to declare please include the following statement: The authors declare no conflict of interest.

FUNDING SOURCE

All sources of funding should be declared. Also define the involvement of study sponsors in the study design, collection, analysis and interpretation of data; the writing of the manuscript; the decision to submit the manuscript for publication. If the study sponsors had no such involvement, this should be stated as follows: No funding source to be declared.

RESEARCH ETHICS COMMITTEE APPROVAL

The submitting author must provide written confirmation of Research Ethics Committee approval for all studies including case reports. The ethics committee as well as the approval number should be included.

STATISTICAL ANALYSIS

Authors are advised to involve medical statisticians at the protocol stage of their research project: to plan sample size, and the selection of appropriate statistical tests for analysis and presentation.

PROTECTION OF PATIENT'S RIGHTS TO PRIVACY

Identifying information should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives informed written consent for publication. The patient should be shown the manuscript to be published. Refer to www.icmje.org.

ETHNIC CLASSIFICATION

The rationale for analysis based on racio-ethnic-cultural categorisation should be indicated.

CATEGORIES OF SUBMISSIONS

Shorter items are more likely to be accepted for publication, owing to space constraints and reader preferences.

Original articles

Original articles on research relevant to anaesthesia and analgesia should not exceed 3 200 words, no more than 30 references, with up to 6 tables or figures. A structured abstract under the following headings, Background, Methods, Results, and Conclusions is a requirement and should not exceed 300 words.

Clinical Review articles

Review articles relevant to anaesthesia and analgesia should not exceed 2 400 words, with a maximum of 20 references and no more than 6 tables or figures. A summary of 300 words or less is required.

Case reports

Case reports should not exceed 1 800 words with no more than 10 references. Figures are limited to 2 figures and may include images or photographs. The case report should have three headings: Summary (not exceeding 100 words), Case report (with no introduction) and Discussion. Case reports will be published online only. The summary and the URL will appear in the printed version.

Scientific Letters

Scientific Letters should not exceed 2 400 words with a maximum of 10 references. Only one table or illustration is permissible. A structured abstract under the following headings, Background, Methods, Results, and Conclusions, is a requirement and should not exceed 250 words.

Letters to the editor

Letters to the editor should be 800 words or less with only one image or table.

MANUSCRIPT PREPARATION

Refer to articles in recent issues for the presentation of headings and subheadings. If in doubt, refer to 'uniform requirements' - www.icmje.org. Manuscripts must be provided in UK English.

Qualification, affiliation and contact details

This information must be provided for ALL authors and must be submitted as a supplementary file.

Email addresses of all author must be provided.

ORCID number of ALL authors must be provided - if authors do not have ORCID, please register at https://orcid.org/

Abbreviations

All abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.

Scientific measurements

Scientific measurements must be expressed in SI units except blood pressure (mmHg) and haemoglobin (g/dl). Litres is denoted with a lowercase 'l' e.g. 'ml' for millilitres). Units should be preceded by a space (except for %), e.g. '40 kg' and '20 cm' but '50%'. Greater/smaller than signs (> and 40 years of age) should also be preceded by a space e.g. > 20 years. No spaces should precede ± and °, i.e. '35±6' and '19°C'.

Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160...

Quotes should be placed in single quotation marks: i.e. The respondent stated: '...' Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.

General formatting

The manuscript must be in Microsoft Word or RTF document format. Text must be 1,5-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes, except for Tables). The manuscript must be free of track changes.

Disclaimers should follow the Conclusion and it should be in the following order: Acknowledgements, Declaration conflict of interest, Funding source, Ethics declaration and ORCID.

ILLUSTRATIONS AND TABLES

If tables or illustrations submitted have been published elsewhere, the author(s) should provide consent to republication obtained from the copyright holder.

Tables may be embedded in the manuscript file and provided as 'supplementary files'. They must be numbered in Arabic numerals (1,2,3...) and referred to consecutively in the text (e.g. 'Table 1'). Tables should be constructed carefully and simply for intelligible data representation. Unnecessarily complicated tables are

strongly discouraged. Tables must be cell-based (i.e. not constructed with text boxes, tabs or enters) and accompanied by a concise title and column headings. Footnotes must be indicated with consecutive use of the following symbols: * † ‡ § ¶ || then ** †† ‡‡ etc.

Figures must be numbered in Arabic numerals and referred to in the text e.g. '(Figure 1)'. Figure legends: Figure 1: 'Title...'. All illustrations/figures/graphs must be of high resolution/quality: 300 dpi or more is preferable, but images must not be resized to increase resolution. Unformatted and uncompressed images must be attached as 'supplementary files' upon submission (not embedded in the accompanying manuscript). TIFF and PNG formats are preferable; JPEG and PDF formats are accepted, but authors must be wary of image compression. Illustrations and graphs prepared in Microsoft PowerPoint or Excel must be accompanied by the original workbook.

REFERENCES

Authors must verify references from the original sources. Only complete, correctly formatted reference lists will be accepted. Reference lists may be generated with the use of reference manager software, but the final document must be delinked from the reference database or otherwise generated manually. Citations should be inserted in the text as superscript, e.g. These regulations are endorsed by the World Health Organization,2 and others.3,4-6 The superscript reference number should come after the punctuation mark and should not be in brackets.

All references should be listed at the end of the article in numerical order of appearance in the Vancouver style (not alphabetical order). Approved abbreviations of journal titles must be used; see the List of Journals in Index Medicus. Names and initials of all authors should be given; if there are more than six authors, the first four names should be given followed by et al. First and last page, volume and issue numbers should be given. Wherever possible, references must be accompanied by a digital object identifier (DOI) link and PubMed ID (PMID)/PubMed Central ID (PMCID). Authors are encouraged to use the DOI lookup service offered by CrossRef. Crossref DOIs should always be displayed as a full URL link in the form https://doi.org/10.xxxx/xxxxx

Journal references:

Jun BC, Song SW, Park CS, Lee DH. The analysis of maxillary sinus aeration according to aging process: volume assessment by 3-dimensional reconstruction by high-resolutional CT scanning. Otolaryngol Head Neck Surg. 2005 Mar;132(3):429-34.

Polgreen PM, Diekema DJ, Vandeberg J, Wiblin RT, et al. Risk factors for groin wound infection after femoral artery catheterization: a case-control study. Infect Control Hosp Epidemiol [Internet]. 2006 Jan [cited 2007 Jan 5];27(1):34-7. Available from: http://www.journals.uchicago.edu/ICHE/journal/issues/v27n1/2004069/2004069.web.pdf.

Book references: Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101.

Chapter/section in a book: Weinstein L, Swartz MN. Pathogenic Properties of Invading Microorganisms. In:

Sodeman WA jun, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.

Internet references: World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: World Health Organization, 2002. http://www.who.int/whr/2002 (accessed 16 January 2010).

Other references (e.g. reports) should follow the same format: Author(s). Title. Publisher place: publisher name, year; pages. Cited manuscripts that have been accepted but not yet published can be included as references followed by '(in press)'. Unpublished observations and personal communications in the text must not appear in the reference list. The full name of the source person must be provided for personal communications e.g. '...(Prof. Michael Jones, personal communication)'.

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A covering letter to the editor is mandatory and must include statements that the manuscript has not been published previously and is not under review elsewhere. It should state details of any prior publication of the research in abstract form or in Congress proceedings. The letter must declare if any of the authors have a conflict of interest and that the requirements for submission, including ethics approval and patient permission for case reports have been fulfilled. All authors must sign the covering letter.

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Manuscripts, after vetting by the editorial team, are assigned for peer-review to 2 reviewers, conversant with the particular field of research. The reviewers and the authors are blinded to each other's identity. The turn-around time for review and initial editorial decision notification aims to be within 6 weeks of submission.

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A PDF proof of an article may be sent to the corresponding author before publication to resolve remaining queries. At that stage, only typographical changes are permitted; the corresponding author is required, having conferred with his/her co-authors, to reply within 2 working days in order for the article to be published in the issue for which it has been scheduled.

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Case Studies
(1 800 words) (3 pages)
Clinical reviews
(2 400 words) (3-4 pages)