Defining a specialty through its literature: A bibliometric analysis of acute care surgery 2005 to 2020

John A. Aucar, MD, MSHI, FACS, CPE a,b,⁎ , Jessica M. Veatch, MD a , Elizabeth Kiscaden, MLIS, AHIP c

a Department of Surgery, Creighton University, Omaha, NE
b Department of Clinical Research, Creighton University, Omaha, NE

⁎ Corresponding author at: Creighton University Department of Surgery, 7710 Mercy Rd, Suite 501, Omaha, NE 68124. Tel.: +1 402-280-4669; fax: +1 217-552-2466. E-mail addresses: john.aucar@commonspirit.org, johnaucar@creighton.edu (J.A. Aucar), jessica.veatch500@commonspirit.org (J.M. Veatch), elizabethkiscaden@creighton.edu (E. Kiscaden).

ARTICLE INFO

Article history:
Received 16 March 2022
Received in revised form 13 June 2022
Accepted 16 June 2022
Available online 23 June 2022

SUMMARY

Background: Acute care surgery (ACS) has grown and evolved since it was conceived in 2005. However, ACS is not recognized in the National Library of Medicine’s Medical Subject Heading thesaurus. This article uses bibliometrics to help define an identity for ACS as a subspecialty of surgery and argue for its addition to the Medical Subject Heading thesaurus.

Methods: The terms “Acute Care Surgery,” “Wounds and Injuries,” “General Surgery,” and “Critical Care” were searched with and without the Text Word [TW] modifier using PubMed. The intersections of search sets were identified with the AND conjunction to determine the proportion of ACS literature relevant to each subject term and calculate the penetration of ACS as a keyword term into each subject domain.

Results: A [Medical Subject Heading] limited search on the term “Acute Care Surgery” yielded a predictable return of 0 article. Search of the cohesive term “Acute Care Surgery” [All Fields], restricted to MEDLINE-indexed, English-language articles yielded 2,351 articles published between 2005 and 2020, inclusive. Using ACS as [Text Word] yielded 517 articles. There was a progressive increase in the rate of annual publications. The frequency of subject terms in the ACS [All Fields] set was as follows: Critical Care, 49.70%; General Surgery, 23.26%; and Wounds and Injuries, 20.88%. The frequency of subject terms in the ACS [TW] set was as follows: Critical Care, 32.88%; General Surgery, 43.52%; and Wounds and Injuries, 15.28%. Of this set, 8.32% of articles were not tagged or did not contain a reference to any of these 3 major subjects.

Conclusion: This study demonstrates that ACS as a subject matter is being increasingly expressed in the literature. Adding ACS as a dedicated term into the National Library of Medicine’s Medical Subject Heading thesaurus of controlled vocabulary as a specialty of Surgery would facilitate indexing and retrieval of the literature most relevant to acute care surgeons.

© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

INTRODUCTION

There are several ways by which a clinical specialty may be defined. These include recognition by the American Board of Medical Specialties through the availability of a certifying examination, the existence of dedicated professional societies and journals, the availability of structured education programs, or by common usage and practice. This article proposes that a specialty can also be defined by identifying a common body of literature using specialty-specific terminology. This proposal’s strength would be augmented if the specialty’s name were included as a Medical Subject Heading (MeSH) term in the National Library of Medicine’s standard vocabulary under the Unified Medical Language System (UMLS) Metathesaurus [1]. The term “Acute Care Surgery” (ACS) had some basis in common usage but did not exist in the medical literature until 2005. As of this writing, it still does not exist in the MeSH thesaurus. The term was adopted as the preferred title for the specialty encompassing trauma, emergency surgery, and critical care by an ad hoc committee of the American Association for the Surgery of Trauma (AAST) [2]. That landmark editorial recognized a developing crisis in the field of trauma surgery. Trauma call was identified as being disruptive to the interest of maintaining an elective surgical practice, but attempts to isolate trauma as a clinical specialty were hampered by the undesirable characteristics of a focused trauma practice. These included the need for continuous coverage, limited revenue generation [3], and a lack of opportunity to practice surgical skills. The latter relates to improved imaging technology, increasing use of
nonoperative management for solid organ injuries, and the deferral of procedural interventions to specialties such as interventional radiology, neurosurgery, and orthopedics [4]. Thus, the model for trauma care as an isolated surgical specialty was deemed nonviable except perhaps in central urban centers with a high proportion of penetrating trauma. These centers were able to preserve operative experience but did not resolve reimbursement issues or lifestyle considerations [5]. Alternative models have been proposed, such as the “European model,” where trauma care is commonly provided by an orthopedist in conjunction with other specialty-based care [6], but these models were not deemed viable in the American system.

With the evolution of new practice styles following the waning of the “golden age of trauma surgery,” recruitment of high-quality surgeons into the field of trauma became progressively difficult [6]. The ensuing identity crisis resulted in the emergence of the field of ACS. A fellowship-based educational structure for ACS was proposed that expanded existing critical fellowships from 12 to 24 months to include coverage of trauma and emergency general surgery plus rotations in specialty care related to trauma, such as vascular, thoracic, hepatobiliary, otolaryngology, neurosurgery, and orthopedics [4]. Since then, the term “Acute Care Surgery” has expanded in common usage and in the literature. Many clinical departments and divisions in academic, private, and hybrid centers previously titled “Trauma” have changed their names to include “Acute Care Surgery” to more accurately reflect the scope of services practiced and taught. However, the term received firm recognition in 2012, when the *The Journal of Trauma, Injury, Infection, and Critical Care* changed its name to *The Journal of Trauma and Acute Care Surgery* [7].

The science of Bibliometrics, known as Bibliometrics, emerged from a 1917 analysis of the literature pertaining to comparative anatomy that demonstrated fluctuations in interest and the distribution of literature about specific animal kingdoms across countries spanning the years 1550 to 1860 [8]. Defining the scope of a particular knowledge domain is useful for identifying gaps in knowledge. This in turn allows rational allocation of resources for future study. It also allows the assessment of the efficiency and effectiveness of prior resource allocations. Bibliometrics can identify patterns of research productivity by author, institution, dissemination source (journals), geography, and subtopics. Bibliometrics is commonly used to assess the importance of an article through citation metrics as well as the dissemination impact on the scientific literature of particular journals [9]. This article has 4 specific aims. The first is to examine the volume of literature associated with the term “Acute Care Surgery” by describing the scope of the subject matter associated with the term and identifying the term’s penetration into the mainstream surgical literature. The second is to promote the readership’s familiarity with the challenges of storage and retrieval of the scientific knowledge base. The third is to support a campaign to influence the National Library of Medicine to insert “Acute Care Surgery” as a MeSH term as a subspecialty of Surgery into its MeSH thesaurus, thereby facilitating retrieval of literature on the topic. The fourth is to assess the impact of the early literature on the subject by evaluation of standard citation metrics [9].

**METHODS**

The cohesive terms “Acute Care Surgery,” “Wounds and Injuries,” “General Surgery,” and “Critical Care” were separately searched with and without the Text Word [TW] modifier using PubMed [10]. Quotation marks were used to create cohesive terms so that only articles with the complete term would be retrieved versus articles with any of the component terms. “Wounds and Injuries” was selected as the MeSH term representing trauma surgery since Trauma and Trauma Surgery do appear as major terms in the MeSH thesaurus, although the words individually appear in several subheadings, including subjects like Psychological Trauma. The same is true of the terms Emergency Surgery and Emergency General Surgery. The [TW] modifier includes a search of all words and numbers in the title, abstract, other abstract, MeSH terms, MeSH Subheadings, Publication Types, Substance Names, Personal Name as Subject, Corporate Author, Secondary Source, Comment, Correction Notes, and Other Terms. These are typically non-MeSH subject terms or author-supplied “keywords” [11]. Without the [TW] modifier, the PubMed default is to include all [All Fields] in an unspecified search that would include ACS occurring in the title of the journal or name of the author’s department. The search sets using ACS are referred to herein as “ACS search sets.” The search sets generated by using “Wounds and Injuries,” “Critical Care,” and “General Surgery” are referred to as “subject searches.” All search sets were filtered to include only MEDLINE-indexed, English-language articles published across a 16-year span between 2005 and 2020, inclusive. The former year represents the first time ACS was used in the literature, and the latter year represents the most recently available full-year results. All searches include electronic publication (epub) dates in 2020, ahead of print publications in 2021. The general format of the search string used was as follows: (“Acute Care Surgery” [All Fields]) AND ((( medicine [Filter]) [AND] (english [Filter]) [AND] (2005:2020 [date])). The key term within quotes was substituted as described, and each subject was searched with both the [All Fields] and the [Text Word] modifier.

The two ACS search sets (with and without [TW] modifier) were then combined using the “AND” conjunction with each of the other subject-matter searches, yielding the intersection of those search sets. This allowed the determination of the proportion of the ACS literature with each of those subjects as a major focus. Replacing the denominator from the number of articles in the ACS search sets to the number of articles in each subject search set allowed calculation of the penetration of ACS as a term into each of the subject domains. The penetration of terms is reported as raw numbers and percentages. Comparative statistics were not applied nor considered relevant. Additionally, the National Center for Biotechnology Information of the U.S. National Library of Medicine [13] was used to search the term “Acute Care Surgery” to see if it exists anywhere within the MeSH thesaurus.

The ACS search sets, without and with the [TW] modifier, were analyzed by year of publication to illustrate the progression of literature volume associated with ACS over time. For the most restrictive search, where ACS was retrieved as a [TW], additional analysis was performed to identify patterns of source (journal), contributing authors, and country of publication These are presented numerically and by visual representation, where appropriate. MeSH term analysis was performed by exporting the ACS search result from PubMed to EndNote and then from EndNote into a tab-delimited CSV file, subsequently imported to MS Excel™. Medical Subject Headings (MeSH) and author-supplied keywords were extracted from the article set and sorted by frequency. Biblioshiny [14] was used for graphical visualizations of article relationships. All findings are presented as descriptive statistics using frequencies of occurrence or percentages. Citescore, a tool used to measure the citation impact of journals indexed in the Scopus bibliometric database, was used to assess the impact of the top journal sources [9,13]. CiteScore is considered to have some advantages over the traditional impact factor [15]. It is calculated annually and counts citations over 4-year window and divides these by the number of publications published during that time. This project was exempt from IRB review because it uses only published information and contains no original human subject data.

**RESULTS**

As of this writing, there are no instances of “Acute Care Surgery” identified by searching the UMLS MeSH thesaurus, confirmed by performing a [MeSH] limited search on the term “Acute Care Surgery” which yielded a predictable return of 0 article. Using “Acute Care Surgery [All Fields]” yielded 2,352 PubMed-indexed, English-language articles published between 2005 and 2020, inclusive. When the search was restricted to the use of ACS as a [Text Word], which includes...
Fig 1. A. Search query: "Acute Care Surgery" [All Fields] AND ((Medline[Filter]) AND (English[Filter]) AND (2005:2020[pdat]))) Result: 2,351 (the results do not sum due to epub–pubdate overlaps). B, Search query: "Acute Care Surgery" ("English"[Language]) AND ("acute care surgery"[tw]) AND (Medline[sb])). Result: 517 (the results do not sum due to epub–pubdate overlaps).

Omitted text: "is demonstrated in Figure 1, showed a progressive increase in the rate of annual publications. This MEDLINE-indexed article was in 2005, credited to an ad hoc committee...combined by the AND conjunction with each of the subject domain searches...major terms are shown in Table 3. The top 25 most common MeSH terms among articles using ACS as a Text Word are shown in Table 2. 12.5 MeSH assignments per article. When only major terms are considered, there were 620 occurrences of 303 subject headings for an average of 1.2 major subject terms per article. The top 25 most common MeSH terms among articles using ACS as a Text Word are shown in Table 2. Many of the most common terms relate to patient characteristics or health services process rather than specific clinical concepts. However, because the MeSH thesaurus is highly granular, manually combining closely related clinical concepts reveals a more accurate view of the subject matter reflected in the ACS literature. These combined “top 10” major terms are shown in Table 3.

The journals that published the most ACS articles and the article counts are shown in Figure 3. The Journal of Trauma and Acute Surgery was noted to be the most prominent source of ACS literature, with or without combining articles prior to the name change from The Journal of Trauma, Injury, Infection, and Critical Care. The most prolific authors writing on the subject of ACS are shown in Figure 4. As with other specialties, high publication productivity is associated with relatively few authors and journal sources and a “long tail” of authors and journals responsible for only a few published articles. Yet, the long tail can represent a major component of the targeted interest [16]. Of the 20 authors with the most publications, 4 (Britt, Jurkovich, Moore (EE), and Scalea)...

Table 1 Search results and intersection of ACS with specific subject matter. (A, C): Penetration of subjects into ACS search set. (B, D): Penetration of ACS into subject search sets

| Subject Search/ACS [All Fields]/subject search | Number of articles (n) | Number intersecting articles | Subject Search/ACS [All Fields] | ACS [All Fields]/subject search |
|-----------------------------------------------|------------------------|------------------------------|---------------------------------|--------------------------------|
| ACS [All Fields]                              | 2,352                  | 491                          | 20.88%                          | 100.0%                         |
| AND Wounds and Injuries [All Fields]          | 33,238                 | 547                          | 23.26%                          | 100.0%                         |
| AND General Surgery [All Fields]              | 64,401                 | 1169                         | 49.70%                          | 100.0%                         |
| AND Critical Care [All Fields]                | 123,074                | 45                           | 6.16%                           | 96.72%                         |
| Articles with none of the 3 major subjects or without ACS | | | | |
| Total                                        | 2,352                  | 2,352                        | 100.0%                          | 100.0%                         |
| ACS [TW]                                      | 517                    | 79                           | 15.28%                          | 100.0%                         |
| AND Wounds and Injuries [Text Word]           | 33,234                 | 225                          | 43.52%                          | 100.0%                         |
| AND General Surgery [Text Word]               | 16,559                 | 170                          | 32.88%                          | 100.0%                         |
| AND Critical Care [Text Word]                 | 40,120                 | 8                            | 8.32%                           | 100.0%                         |
| Articles with none of the 3 major subjects or without ACS | | | | |
| Total                                        | 517                    | 517                          | 100.0%                          | 100.0%                         |

Fig. 1A. Search query: "Acute Care Surgery" [All Fields] AND ((Medline[Filter]) AND (English[Filter]) AND (2005:2020[pdat])). Result: 2,351. (The results do not sum due to epub–pubdate overlaps). B, Search query: "Acute Care Surgery" ("English"[Language]) AND ("acute care surgery"[tw]) AND (Medline[sb])). Result: 517. (The results do not sum due to epub–pubdate overlaps).
were among the 19 original members of the AAST Ad Hoc Committee to Develop the Reorganized Specialty of Trauma, Surgical Critical Care, and Emergency Surgery. The top contributing countries with a geographical visualization are shown in Figure 5. The impact of the top journals publishing articles in the ACS space is indicated by the CiteScore listed in Table 4. This shows that the subject is well accepted within the mainstream academic space.

**DISCUSSION**

Because of the exponentially increasing size of the published literature, it is essential that an organized approach be taken to managing the scientific knowledge base. The UMLS Metathesaurus and its derivative, the NLM MeSH thesaurus, function to identify the major subject matter within published articles to facilitate retrieval. Subject indexing has traditionally been performed manually, with guidelines, by librarians but is moving toward computer automation using natural language processing techniques and artificial intelligence [17]. The term “Acute Care Surgery” is currently and conspicuously absent from the MeSH thesaurus despite its emergence over the last 15 years as a newly recognized subspecialty of surgery. The term “Acute Care Surgery” did not appear as a cohesive term in the literature until the 2005 article reflecting the work of the AAST ad hoc committee. Editorialization on the subject was the most prominent theme of articles using the term over the next several years. However, articles reporting patent data and using ACS as a text word term began appearing as early as 2006 [18]. In common practice, ACS is used somewhat ambiguously. As originally intended by the ad hoc committee of the AAST, ACS was intended to represent the emerging subspecialty of surgery which included trauma, emergency general surgery, and critical care. However, it is frequently used to refer to the emergency general surgery component of the broader specialty. Some academic departments and divisions have modified their names to reflect their broad scope of surgical practice but include trauma as in “trauma and acute care surgery,” which technically could be considered redundant. This ambiguity, however, does not impair the recognition of the specialty or the clinical focus of those who identify as acute care surgeons. Consideration was given to alternative search strategies, including using “Trauma and Acute Care Surgery” as the ACS search set, but these strategies were found to be either more restrictive or less representative of the subject-focused, mainstream academic space.

**Fig 2.** Results of combined search. A–C, Specific subject matter articles with ACS keyword tag.

| Rank | Term Count | Rank | Term Count | Rank | Term Count |
|------|------------|------|------------|------|------------|
| 1    | Humans     | 530  | 1          | General Surgery | 18  |
| 2    | Female     | 288  | 2          | Internship and Residency | 17  |
| 3    | Male       | 249  | 3          | Surgical Procedures, Operative | 17  |
| 4    | Adult      | 188  | 4          | Models, Organizational Personnel | 15  |
| 5    | Middle Aged| 187  | 5          | Outcome Assessment, Health Care | 13  |
| 6    | Retrospective Studies | 177  | 6          | Emergencies | 12  |
| 7    | Aged       | 124  | 7          | Appendectomy | 11  |
| 8    | United States | 87  | 8          | Emergency Treatment | 10  |
| 9    | Treatment Outcome | 77  | 9          | Attitude of Health Personnel | 9  |
| 10   | Acute Disease | 66  | 10         | Fellowships and Scholarships | 9  |
| 11   | Aged, 80 and over | 62  | 11         | Hospital Mortality | 9  |
| 12   | Young Adult | 62  | 12         | Laparoscopy | 9  |
| 13   | Adolescent | 51   | 13         | Quality Improvement | 9  |
| 14   | General Surgery/education | 42  | 14         | Curriculum | 8  |
| 15   | Length of Stay | 42  | 15         | Pandemics | 8  |
| 16   | Time Factors | 42  | 16         | Career Choice | 7  |
| 17   | Critical Care | 40  | 17         | Emergency Service, Hospital | 7  |
| 18   | Length of Stay/statistics & numerical data | 38  | 18         | Clinical Competence | 6  |
| 19   | Emergencies | 35   | 19         | Emergency Medical Services | 6  |
| 20   | Hospital Mortality | 35  | 20         | Trauma Centers | 6  |
| 21   | Wounds and Injuries/surgery | 35  | 21         | Traumatology | 6  |
| 22   | Surveys and Questionnaires | 32  | 22         | Cholecystectomy, Laparoscopic | 5  |
| 23   | Workforce | 31   | 23         | Communication | 5  |
| 24   | Prospective Studies | 30  | 24         | Coronavirus Infections | 5  |
| 25   | Risk Factors | 29  | 25         | Cost of Illness | 5  |

**Table 2**

| Most common MeSH terms tagged to ACS literature (n = 517 articles). |
|---------------------------------------------------------------|
| **Most common major & minor terms** | **Most common major terms** |
| Rank | Term | Count | Rank | Term | Count |
|------|------|-------|------|------|-------|
| 1    | Humans | 530   | 1    | General Surgery | 18  |
| 2    | Female | 288   | 2    | Internship and Residency | 17  |
| 3    | Male   | 249   | 3    | Surgical Procedures, Operative | 17  |
| 4    | Adult  | 188   | 4    | Models, Organizational Personnel | 15  |
| 5    | Middle Aged | 187 | 5    | Outcome Assessment, Health Care | 13  |
| 6    | Retrospective Studies | 177 | 6    | Emergencies | 12  |
| 7    | Aged   | 124   | 7    | Appendectomy | 11  |
| 8    | United States | 87  | 8    | Emergency Treatment | 10  |
| 9    | Treatment Outcome | 77  | 9    | Attitude of Health Personnel | 9  |
| 10   | Acute Disease | 66  | 10   | Fellowships and Scholarships | 9  |
| 11   | Aged, 80 and over | 62  | 11   | Hospital Mortality | 9  |
| 12   | Young Adult | 62  | 12   | Laparoscopy | 9  |
| 13   | Adolescent | 51   | 13   | Quality Improvement | 9  |
| 14   | General Surgery/education | 42  | 14   | Curriculum | 8  |
| 15   | Length of Stay | 42  | 15   | Pandemics | 8  |
| 16   | Time Factors | 42   | 16   | Career Choice | 7  |
| 17   | Critical Care | 40   | 17   | Emergency Service, Hospital | 7  |
| 18   | Length of Stay/statistics & numerical data | 38  | 18   | Clinical Competence | 6  |
| 19   | Emergencies | 35   | 19   | Emergency Medical Services | 6  |
| 20   | Hospital Mortality | 35  | 20   | Trauma Centers | 6  |
| 21   | Wounds and Injuries/surgery | 35  | 21   | Traumatology | 6  |
| 22   | Surveys and Questionnaires | 32  | 22   | Cholecystectomy, Laparoscopic | 5  |
| 23   | Workforce | 31   | 23   | Communication | 5  |
| 24   | Prospective Studies | 30  | 24   | Coronavirus Infections | 5  |
| 25   | Risk Factors | 29   | 25   | Cost of Illness | 5  |

**Table 3**

| Major subjects by combined clinical concepts |
|---------------------------------------------|
| **Most common major subject terms combined by clinical concept** |
| Clinical subject | Count |
|------------------|-------|
| General surgery  | 22    |
| Appendectomy     | 20    |
| Surgical procedures | 20  |
| Laparotomy/Laparoscopy | 16 |
| Traumatology     | 16    |
| Cholecystitis    | 13    |
| Vascular         | 8     |
| Wounds and injuries | 6   |
| Colon            | 4     |
| Intestines       | 4     |
surgical literature of primary interest to practicing Acute Care Surgeons. This could also impair the search strategy’s Recall metric, which is further discussed below.

There are various search engine options for searching the MEDLINE database of the NLM (PubMed, Ovid, EBSCOHost, etc.). Some sources, such as Cochrane Library, will include MEDLINE-indexed articles but limit them to systematic reviews and meta-analyses. This bibliometric analysis used PubMed to specifically search the MEDLINE database. Although the study could theoretically be conducted using broader databases and alternative terms, this limited search represents a cross-sectional snapshot of the mainstream surgical literature likely to be of most interest to practicing surgeons. It demonstrates that ACS is becoming ingrained into surgical terminology and is increasingly recognized as a subspecialty with a defined scope and identifiable practitioners.

The asymmetrical geographic distribution and relatively few prolific authors are typical of an “early adopter” model of new subjects and are likely to change over time.

The MeSH nomenclature represents a fluid and evolving vocabulary which as of this writing does not include ACS. The term “Trauma” is not represented as a major heading in a surgical context but maps to “Wounds and Injuries.” Various headings and subheadings using trauma in a surgical context have been introduced between 1975 (Trauma Centers) and 2021 (Trauma Nursing). A search of the MeSH thesaurus for the term “Surgery” yields 85 headings and subheadings with 28 total occurrences of “surgery” or “surgical.” [12]. The term “Acute Care” does not occur within that MeSH thesaurus and ACS does not occur as a cohesive term anywhere within the MeSH thesaurus. Although many other relevant subspecialty terms are also missing from the MeSH thesaurus, a full analysis of MeSH inefficiencies is beyond the scope of this article. This situation creates a challenge for optimizing subject matter searches.

The efficiency of literature search techniques is subject to the metrics of Recall and Precision [19]. These metrics are similar to sensitivity (TP/(TP + FN) and PPV (TP/(TP + FP) used to evaluate the accuracy of laboratory tests. Recall is the number of retrieved relevant articles
in proportion to all relevant articles, whereas Precision is the number of retrieved relevant articles in proportion to all retrieved articles. Recall can only be estimated unless a gold standard exists to accurately define the number of relevant articles within a large pool of literature. It is generally considered that there will be a tradeoff between Recall and Precision, although the relationship is not linear [15]. The goal of any subject search is to identify the highest number of relevant articles while retrieving the fewest possible articles that are not relevant to the subject of interest. This is particularly important for meta-analysis and systematic reviews, which have come to be regarded as the highest level of scientific evidence [20]. Author-supplied keywords are the only method available to identify an article as specifically relevant to the subject of Acute Care Surgery in a [TW] search. Using [All Fields] searching allows retrieval of articles published by departments, divisions, or journals containing ACS in their name, regardless of the subject focus of the article. We have shown that > 90% of articles retrieved by either strategy will be tagged with the subjects of Wounds and Injuries, General Surgery, or Critical care, yielding Precision values of 0.94 (ACS [TW]) and 0.94 (ACS [AllFields]). The reliability of information retrieval strategies is naturally dependent on the accuracy of indexing. Because ACS is a relatively new term and is used ambiguously, it is likely underrecognized by information professionals and indexing algorithms, leaving much of the relevant literature untagged.

The finding that a vast majority of articles of potential interest to acute care surgeons are not indexed using an author-supplied term for ACS demonstrates a major challenge to rapid information retrieval and filtering. The lack of a defined associated MeSH term compounds this problem, leaving it to the authors to include ACS as a keyword to facilitate retrieval. The addition of Acute Care Surgery as a term into the MeSH thesaurus could markedly improve the reliability of subject matter indexing and retrieval of relevant scientific knowledge. The addition of ACS as a dedicated term into the NLM’s MeSH thesaurus as a specialty of Surgery would facilitate indexing and retrieval of the literature most relevant to Acute Care Surgeons.

### Abbreviations

- **NLM**: National Library of Medicine
- **MeSH**: Medical Subject Heading
- **ACS**: Acute Care Surgery
- **TW**: Text Word
- **TP**: true positive
- **TN**: true negative
- **FP**: false positive
- **FN**: false negative

### Disclosures

- **Author Contribution**: Dr John Aucar is responsible for the conception of this study and participated in all aspects, including the drafting of the manuscript. Dr Jessica Veatch and Elizabeth Kiscaden participated in literature searching, data analysis, preparation of tables, and editing of the manuscript. All authors have reviewed the final manuscript and approved its submission for publication.
- **Conflict of Interest**: None of the authors have any financial or conflict of interest related to the contents of this manuscript. The project is unfunded and performed as part of routine academic activity.
- **Funding Source**: The project was unfunded, and the authors did not receive any specific payment for its production.
- **Ethics Approval**: The article was exempted from IRB review because it analyzes published data and contains no human subject data.

### References

1. [The Metathesaurus](https://www.nlm.nih.gov/research/umls/msh.html). Accessed September 25, 2021.
2. [Committee to Develop The Reorganized Specialty of Trauma, Surgical Critical Care, and Emergency Surgery](https://www.jstor.org/stable/31305772). J Trauma. 2005;58(3):614–6.
3. [Aucar JA, Hicks LL. Economic modeling comparing trauma and general surgery reimbursement. Am J Surg. 2005;190(6):932–40.](https://www.journals.lww.com/ajsg/abstract/2005/06010/Economic_Modeling_Comparing_Trauma_and.40)
4. [Spain DA, Miller FB. Education and training of the future trauma surgeon in acute care surgery: trauma, critical care, and emergency surgery. Am J Surg. 2005;190(2):212–7.](https://www.journals.lww.com/ajsg/abstract/2005/06010/Education_and_Training_of_the_Future_Trauma_Surgeon.701)
5. [Giesla Dj, Moore EE, Moore JR, Johnson JL, Cothren CC, Burch J. The academic trauma center is a model for the future trauma and acute care surgeon. J Trauma. 2005;58(4):657–61; discussion 661–2.](https://www.journals.lww.com/jtrauma/Abstract/Pages/aboutthejournal.aspx. Accessed September 25, 2021.)
6. [Moore EE, Maier RV, Hoyt DB, Jurkovich GJ, Trunkey DD. Acute care surgery: Eratirjarkelua. J Am Coll Surg. 2006;202(4):698–701.](https://www.journals.lww.com/jtrauma/Abstract/Pages/aboutthejournal.aspx. Accessed September 25, 2021.)
7. [Journal of Trauma and Acute Care—about the journal.](https://journals.lww.com/jtrauma/Pages/aboutthejournal.aspx. Accessed September 25, 2021.)
8. [Raisig LM. “Statistical bibliography in the health sciences.” Bull Med Library Assoc. 1962;50:450–61. [Web.]](https://www.nlm.nih.gov/research/umls/statbib.html)
