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Original Article

Use of acronyms in anaesthetic and associated investigations: appropriate or unnecessary? – the UOAIAAAIAOU Study*

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Summary

We examined the prevalence of novel acronyms in the titles of anaesthetic and related studies and the response of anaesthetists to them. We separately analysed trainee-led research projects in the UK supported by the Research and Audit Federation of Trainees (RAFT), and a 10-year cohort of papers identified using the PubMed literature search tool. We also conducted a survey of 20 anaesthetists within our institution regarding the utility and impact of titles containing acronyms, and their recall of the associated topics. Finally, we developed a scoring system for acronym accuracy and complexity, the ORigin of AcroNym letterinG Used Term AppropriateNess (ORANGUTAN) score, and measured the progression of acronym usage over the 10-year period studied. Our results show that while acronyms themselves are sometimes considered memorable, they do not aid recall of topics and are, in general, not considered helpful. There has been an increase in the prevalence of acronymic titles over 10 years, and in the complexity of acronyms used, suggesting that there is currently a selective pressure favouring the use of acronyms even if they are of limited benefit.

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Introduction

Medical acronyms and abbreviations are an essential part of the professional lexicon and serve multiple purposes, such as improving readability and speeding up documentation and information exchange. However, novel or idiosyncratic acronyms may cause confusion and misinterpretation; furthermore, some common medical abbreviations have been shown to have as many as 12 different long forms [1]. It has been shown that acronyms are a leading cause of miscommunication leading to medical error [2], and that even the most widespread acronyms are commonly misinterpreted [3].

In recent years, the use of acronyms has expanded to the titles of scientific studies. There has been a documented increase in the use of freshly coined acronyms in study titles between 2000 and 2012, with concerns raised about whether they are a useful tool or merely an academic distraction [4].

Although Pottegard et al. [4] looked at a number of medical specialties, they did not include anaesthesia. With an apparent proliferation of acronymically titled studies of potential anaesthetic interest, and an expectation that UK anaesthetic trainees should participate in audit/research projects, many of which involve acronyms, we investigated

the use and usefulness of acronyms in anaesthesia-related studies.

Methods

There were three parts to our study. First, we accessed the project pages of all 19 of the anaesthetic trainee networks (TRNs) associated with the Research and Audit Federation of Trainees (RAFT; see https://www.raftrainees.com/), on two separate occasions, and extracted the titles of every study resulting in a conference presentation or publication. We recorded whether the studies were single- or multi-centre, and if the latter, how many TRNs participated in the project. We also analysed each title for the presence of a novel acronym.

Second, after reassuring potential participants about confidentiality and freedom from coercion, we surveyed 10 consultant anaesthetists and 10 trainees in our department (this was exempted from requiring Health Research Authority (HRA) ethical approval by virtue of its status as a staff survey), to ascertain their views of the use of novel acronyms in study titles. We selected the five most collaborative studies from the first phase of the study and assessed the participants' recognition and recall of the acronyms and the study topics.

Third, we performed a PubMed literature search using the search string 'anaesthesia AND (study[ti] OR trial [ti])', filtered by English language and restricted to the last 10 years (July 2008–July 2018). Although acknowledging that this may not have identified all acronymised studies, our main aim was to identify those studies with, for example, 'the XXX trial' or 'the XXX study' in the title. We excluded studies involving veterinary anaesthesia. The title of every paper was reviewed for the presence of a novel descriptive acronym, and all duplicate entries were removed from the list. We used a modified Delphi technique [5] to create a scoring system for the accuracy and relevance of the acronym used (ORANGUTAN; see Table 1), and applied it to each novel acronym identified. We then assessed the change in the proportion of acronyminical studies, and their ORANGUTAN scores, over time.

Results were analysed using Fisher's exact test or Pearson's regression analysis, with $p < 0.05$ representing statistical significance.

Table 1 The ORANGUTAN scoring system for acronym accuracy and relevance.[a]

ORANG (ORigin of AcroNym letterinG)[b]		UTAN (Used Term AppropriateNess)[c]	
Letter not the first initial of a title word	5	Topical medical word	0
Letter used does not appear in the title	5	Real non-medical word	5
Unable to work out origin of letter	5	Not a real word	15
		Unrelated/confusing medical word	20

[a]ORANGUTAN score = sum of ORANG and UTAN scores.
[b]Applied to each letter in the acronym. Total ORANG = sum of scores.
[c]Applied to the acronym itself. Total UTAN = sum of scores.

Results

We identified 66 unique projects associated with RAFT, of which 32 (49%) featured a novel acronym. Acronymous titles were more likely in multi-centre studies (11/12; 92%) than single-centre ones (21/54; 39%; $p < 0.001$). The five most collaborative studies were iHypE (10 TRNs), SNAP2: EpiCCS (five TRNs), COMS (five TRNs), SNAP1 (four TRNs) and DALES (three TRNs).[1]

All the anaesthetists were aware of trials using novel acronyms, with most finding them unhelpful (Table 2). Most anaesthetists (12/20; 60%) recognised one or more of the most collaborative studies, but only four of these (20%) were able to identify the topic correctly. Only two anaesthetists were able to guess any of the topics.

The literature search identified a total of 11,898 papers, of which 148 were excluded (veterinary), leaving 11,750 for analysis. Of these, 493 with novel acronyms were identified, of which 145 were excluded as they were either interim papers or a substudy of another acronymerish study (subacronymial), and a further eight were excluded as they were incorrectly classified. This left a total of 340 studies (3%) for ORANGUTAN analysis. The proportion of studies with novel acronyms, and the ORANGUTAN scores, both increased over time (Figs. 1 and 2).

We noted numerous qualitative examples of confusing acronyms, including unrelated studies for which the authors had independently chosen identical acronyms, two substudies labelled with a novel acronym to describe their secondary analyses and one instance where a study group with multiple publications, using the same acronym and dataset, have become confused by their own acronym and started publishing with a different one!

[1] *Intra-operative Hypotension in the Elderly; Sprint National Audit Project 2: Epidemiology of Critical Care after Surgery; Cardiac Output Monitor Study; Sprint National Audit Project 1: Evaluation of patient reported outcomes after anaesthesia; Drug Allergy Labels in the Elective Surgical population.

Discussion

Acronyms and abbreviations are an integral part of medical communication, and often serve a useful purpose in terms of improving specificity and speed of communication. However, this must be balanced against the risk of ambiguity and confusion. Our study suggests that the use of acronymisationality is increasing in the anaesthetic literature, as seems to be the case for other specialties [4]. We can only presume that this is in an attempt to catch the eye of potential recruiters/investigators, funding bodies, editors and readers, and to use in publicity during or after the study has finished. It is possible also that with increasing uptake/usage of social media, and limited space, character count or patience for long words and strings of text, the increasing acronymosity we have observed simply represents a need to limit the use of keyboards in general.

The ORANGUTAN scores suggest that the acronyms used are becoming more complicated and fanciful, rather than clearer; this might be because all the good ones have been used up, or because there may be some kind of extrinsic pressure favouring acronym generation (acronymesis [6]). Although some acronyms have been condensed verbatim from the long-form title of the trial, others appear to have required significant monkeying around, with contrived syntax and unorthodox medical terms, apparently

Table 2 Summary of responses to the acronymification survey. Values are number (proportion).

Views regarding acronyms in study titles	
Thought acronyms were 'helpful'	8 (40%)
Currently involved in research	3/8 (38%)
Not currently involved in research	5/8 (42%)
Recognised any of the top five acronyms	12 (60%)
Correctly identified any acronyms	4 (20%)
Correctly identified more than one acronym	2 (10%)
Most frequent qualitative remarks	
'Easy recall'	5 (25%)
'Memorable'	5 (25%)
'Eye-catching'	4 (20%)
'Forced'	7 (35%)
'Not informative'	3 (15%)
'Ambiguous'	3 (15%)

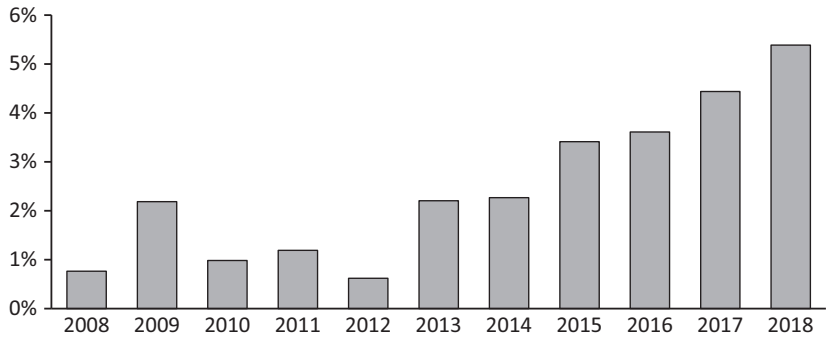

Figure 1 Proportion of studies with a novel acronym, 2008–2018. $p < 0.0001$ for comparison of the first half of the period with the second.

Figure 2 ORANGUTAN score for acronymidious studies, 2008–2018. Solid line, average score; dotted line, regression line of best fit ($R = 0.6337$; $p = 0.036$).

used just to produce necessary letters for the acronym. In some cases, letters that do not appear in the long-form title at all have made it into the acronym, which seems unnecessary when the acronym itself sheds no light on the topic studied.

The higher proportion of acronymilacity in titles of multicentre studies might reflect an intrinsic need of investigators to belong to a troop and share common values, like other primates, or perhaps just a case of too many minds with not enough to do. The high incidence of acronymophilia in multicentre study groups may also reflect a desire to improve or clarify within-group communication. The need to delineate quickly between different trials in the same institution is certainly valid during the design, preparation and recruitment stages of research, but we would advise these groups to consider whether their study's pet name adds clarity when presented to a wider audience.

In the spirit of good research governance, we have applied our own scoring system to our own acronyms. ORANGUTAN itself has an ORANGUTAN score of 20, whereas UOAIAAAIAOU has an ORANGUTAN score of 15, although we have applied a post-hoc correction of -15 (giving a final ORANGUTAN score of zero) because it is also a palindrome.

Finally, our admittedly limited survey suggests that only a minority of anaesthetists, even those actively involved in research, find this kind of novel acronym helpful. Possibly even fewer would find this article helpful. This would suggest some sort of internal conflict between the need to generate ever more complicated acronyms on the one hand (neologistic hyperacronymania), and a dislike of the acronyms produced (acronymophobia) on the other. All in all, our results suggest that investigators need to get out more.

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