Predatory publishing solicitation: a review of a single surgeon’s inbox and implications for information technology resources at an organizational level

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Over a 6-month period, roughly one-third of emails received in a single surgeon’s email inbox were predatory in nature (i.e., soliciting material for nonexistent journals or conferences). While existing databases (e.g., Beall’s list and The CalTech Library list of questionable conferences) catalogue many fraudulent senders, the list is ever-expanding. The overall cost to health care organizations in terms of wasted bandwidth and financial diversion is extensive, as is confusion for trainees and colleagues. For the sake of fiscal responsibility and the maintenance of scholarly standards, it is incumbent upon organizational information technology departments to continually refine strategies to reduce this adverse impact.

Predatory publishing or “phishing” emails purport to invite scholarly activity, but in truth actually seek to collect publishing or registration fees.1 Senders from these “journals” and/or “conferences” attempt to disguise their intent and platforms. Despite claims to the contrary, predatory journals do not provide peer review or editorial services — essential steps in validating research methodology and manuscript content — nor do they offer transparent policies or processes regarding fees, long-term archiving and/or the management of potential conflicts of interest.2 The challenges incumbent in the academic, peer-reviewed literature associated with predatory journals have now become so substantial that this was the lone topic at the most recent meeting of the Surgery Journal Editors Group (SJEG).3 Although the SJEG does not have any overriding policing authority, it is an engaged group of editors from the most prominent peer-reviewed surgical journals in the world, who determine and evaluate surgical publication policy and requirements. Furthermore, our surgical trainees, research assistants and nursing collaborators are also finding it increasingly difficult to navigate the extensive web of deceitful possibilities and invitations. In the event that these journals do actually publish, the lack of adequate peer review dilutes the quality of evidence within the literature.4

Case study of a single surgeon’s email inbox

All emails received by an academic surgeon at his hospital-provided email account over a 6-month period were evaluated by 2 reviewers (M.M. and D.N.). Characteristics recorded included the site of origin, presence of grammatical errors, contact information provided, relevance of the invitation to the recipient’s specialty, as well as whether the sender had already been identified as fraudulent by either Beall’s list of potential predatory journals and publishers (beallslist.net) or the
Phishing emails seeking manuscript submissions originated from 43 different fake publishers with 146 different journal titles (Table 1) or 8 fake stand-alone journals (Table 2). The majority of fake publishers were already included on Beall’s list (86.7%). Characteristics associated with emails suspected of being predatory included the presence of obvious spelling and/or grammar errors (90.2%), a salutation including the word “greetings” (60.4%; e.g., “Greetings of the day,” “Greetings from...,” “Warm greetings...”), an offer to submit a broad range of document/article categories (53.3%; e.g., including research or review articles, case reports, editorials, clinical images, letters to editors), and/or the use of excessively flattering language (46.7%; Table 3).

Table 1 (part 1 of 3). Summary of phishing emails from predatory publishers seeking manuscript submissions

| Publisher                      | No. (%) of emails received, n = 285 | Present on Beall’s list | Journal titles used by predatory publisher                                                                 |
|-------------------------------|-------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------|
| Open Access Text              | 42 (14.7)                           | Yes                      | • Neurology and Neuroscience Reports
• Journal of Case Reports in Medicine—Trends in Transplantatio
• Trends in Medicine Journal
• Clinical Research and Trials
• Global Surgery
• Rheumatology and Orthopedic Medicine
• Journal of Clinical and Molecular Medicine
• Surgery and Rehabilitation Journal
• Journal of Trauma and Emergency Care
• Clinical and Medical Pediatrics Journal
• Trends in General Practice
• Physical Medicine and Rehabilitation
• Clinical Microbiology and Infectious Diseases
• Journal of Translational Science
• Biology, Engineering and Medicine Journal
• Journal of Clinical Investigation and Studies
• Biomedical Research and Clinical Practice
• Preventive Medicine and Community Health
• Trauma and Emergency Care Journal
• Cardiothoracic and Vascular Sciences
• Journal of Allergy and Immunology
• Journal of Translational Science
• Research and Review Insights |
| OMICS Publishing Group        | 19 (6.7)                            | Yes                      | • United Journal of Physical Medicine and Rehabilitation
• Journal of Pharmaceutical Regulatory Affairs: Open Access
• Cardiac and Pulmonary Rehabilitation
• Journal of Forensic Medicine
• International Journal of Physical Medicine and Rehabilitation
• Journal of Clinical and Experimental Transplantation
• Journal of Clinical Microbiology and Antimicrobials
• Occupational Medicine and Health Affairs
• Anthropology Journal
• Journal of Phylogenetics and Evolutionary Biology
• Journal of Neuroinfectious Diseases
• Reconstructive Surgery and Anaplastology |
| Remedy Publications           | 18 (6.3)                            | Yes                      | • Annals of Medical and Medicine Research
• Journal of Surgical Techniques and Procedures
• Family Medicine: Clinical Investigations and Experimental Medicine
• Annals of Plastic and Reconstructive Surgery
• Clinical Case Reports International
• Journal of Cytology and Pathology
• Journal of Dermatology and Plastic Surgery
• Plastic & Reconstructive Surgery Journal |
Table 1 (part 2 of 3). Summary of phishing emails from predatory publishers seeking manuscript submissions

| Publisher                      | No. (%) of emails received, n = 285 | Present on Beall’s list | Journal titles used by predatory publisher                                                                 |
|--------------------------------|-------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------|
| Austin Publishing Group        | 17 (6.0)                            | Yes                     | • Annals of Surgery and Perioperative Care  
• Physical Medicine and Rehabilitation  
• Austin Journal of Clinical Trials: Open Access  
• Austin Hypertension  
• Austin Physical Medicine  
• Austin Journal of Women’s Health  
• Austin Journal of Clinical Pathology  
• Journal of Surgery                                                                 |
| Gavin Publishers               | 14 (4.9)                            | Yes                     | • Archives on Veterinary Science and technology  
• Sports Injuries & Medicine  
• Archives of Surgery and Clinical Case Reports  
• Journal of Drug design, Delivery and Safety  
• Applied Clinical Pharmacology and Toxicology  
• International Journal of Critical Care and Resuscitation  
• Current Trends in Clinical Trials                                                                 |
| Peertechz                     | 11 (3.9)                            | Yes                     | • International Journal of Oral and Craniofacial Science  
• International Journal of Veterinary Science and Research  
• Open Journal of Trauma  
• Journal of Medicinal Chemistry and Research  
• Internation Journal of Dermatology and Clinical Research  
• Journal of Novel Physiotherapy and Rehabilitation  
• International Journal of Immunotherapy and Cancer Research  
• Journal of Clinical Pharmacology and Clinical Pharmacokinetics                                                                 |
| ClinMed International Library | 9 (3.2)                             | Yes                     | • International Journal of Pediatric Research  
• International Journal of Physiatry  
• International Archives of Substance Abuse and Rehabilitation  
• International Journal of Cognition and Behaviour  
• Anesthesiology Case Reports  
• International Journal of Physical Medicine and Rehabilitation                                                                 |
| Allied Academies              | 7 (2.5)                             | Yes                     | • Case Reports in Surgery and Invasive Procedures  
• Timely Topics in Clinical Immunology  
• Journal of Veterinary Medicine  
• Journal of Plant Biotechnology and Microbiology  
• Timely Topics in Clinical and Vaccine Research  
• Biology and Medicine Case ReportsClinical Trials and Vaccine Research                                                                 |
| SCIAEON                       | 7 (2.5)                             | Yes                     | • Veterinary Sciences and Medicine  
• Journal of Pediatric Research and Child Health                                                                 |
| SM Online Publishers          | 7 (2.5)                             | Yes                     | • Annals of Burns and Trauma  
• Journal of Surgical Oncology and Clinical Research  
• SM Physical Medicine & Rehabilitation                                                                 |
| Global Science Library        | 6 (2.1)                             | No                      | • Journal of Clinical Case reports and reviews  
• Journal of Pediatrics  
• GSL Journal of Pediatrics  
• GSL International Journal of Surgery Open  
• GSL Journal of Clinical Research and Case Reports Access  
• GSL Journal of Clinical Case Reports and Reviews  
• Internation Journal of Surgery                                                                 |
| Insight Medical Publishing    | 6 (2.1)                             | Yes                     | • Pediatric Infectious Diseases: Open Access  
• Journal of Neurodegenerative Diseases and Disorders  
• Journal of Zoonotic Diseases and Public Health  
• Journal of Clinical Medicine and Therapeutics  
• Journal of Clinical and Molecular Endocrinology                                                                 |
| KEI Journals                  | 4 (1.4)                             | Yes                     | • Medical Research Archives                                                                 |
| Pulsus Group                  | 4 (1.4)                             | Yes                     | • Journal of Surgery: Case Reports  
• Surgery: Case Report  
• Journal of Addiction and Clinical Research  
• Pulsus Journal of Surgical Research                                                                 |
| Science Publishing Group      | 4 (1.4)                             | Yes                     | • SPG Open  
• SPG Biomed                                                                 |
The majority of the predatory conference invitations (97.4%) originated from 14 unique fake hosts, of which more than half (57.1%) were present on CalTech Library’s list of questionable conferences (Table 4). In the absence of a comprehensive list of fake conference hosts to rely on, characteristics such as the presence of spelling and/or grammar errors (73.0%), use of the word “greetings” (41.2%), appealing words in the conference title giving it an international appearance (74.9%; e.g., global, world, euro), and the use of excessively flattering language (42.7%) are often helpful (Table 5).

Nearly all publishers and stand-alone journals (91.9%), as well as the majority of conference hosts...
Table 2. Summary of phishing emails from predatory stand-alone journals seeking manuscript submissions

| Journal                                      | No. (%) of emails received, n = 285 | Present on Beall’s list |
|----------------------------------------------|-------------------------------------|-------------------------|
| Clinics in Surgery                           | 28 (9.8)                            | Yes                     |
| World Journal of Surgery and Surgical Research | 10 (3.5)                          | No                      |
| Accura Science                               | 6 (2.1)                            | No                      |
| United Journal of Physical Medicine and Rehabilitation | 3 (1.1)                        | No                      |
| Annals of Clinical Case Reports              | 1 (0.4)                            | Yes                     |
| International Journal of Animal Science      | 1 (0.4)                            | No                      |
| International Journal of Critical Care and Trauma | 1 (0.4)                        | No                      |
| Journal Surgery Research and Reports         | 1 (0.4)                            | No                      |

Table 3. Characteristics of phishing emails seeking manuscript submissions

| Characteristic                                      | No. (%) of emails received, n = 285 |
|----------------------------------------------------|-------------------------------------|
| Email origin                                       |                                     |
| Sent from free provider (e.g., gmail.com)          | 9 (3.2)                            |
| Purported country of origin                        |                                     |
| None mentioned                                     | 139 (48.8)                         |
| USA                                                | 120 (42.1)                         |
| UK                                                 | 18 (6.3)                           |
| Italy                                              | 4 (1.4)                            |
| Greece                                             | 1 (0.4)                            |
| Japan                                              | 1 (0.4)                            |
| South Korea                                        | 1 (0.4)                            |
| Switzerland                                        | 1 (0.4)                            |
| Email salutation                                   |                                     |
| Addressed by name                                  | 226 (79.3)                         |
| Generic                                            | 49 (17.2)                          |
| Absent                                             | 7 (2.5)                            |
| Addressed to wrong name                            | 3 (1.1)                            |
| “Greetings…”                                       | 172 (60.4)                         |
| Journal characteristics                            |                                     |
| Impact Factor cited                                | 28 (9.8)                           |
| ISSN number cited                                  | 48 (16.8)                          |
| Claim to offer editorial services and/or a peer review process | 108 (37.9)                       |
| Claim to be open access                            | 78 (27.4)                          |
| Claim to offer short publication time              | 44 (15.4)                          |
| Broad range of documents accepted (e.g., research, review, case report, editorial, clinical image, letter to editor) | 152 (53.3)                |
| Discounted publication fee mentioned                | 49 (17.2)                          |
| Publisher/standalone journal online presence       |                                     |
| Organization has a website                         | 262 (91.9)                         |
| Organization is verifiable online (i.e., listed on PubMed) | 0 (0)                              |
| External links provided within the email           | 157 (55.1)                         |
| An “unsubscribe” mechanism is available            | 133 (46.7)                         |
| Disclaimer present at the end of the email         | 53 (18.6)                          |
| Email language                                     |                                     |
| Presence of spelling or grammar errors             | 258 (90.5)                         |
| Use of flattery                                     | 133 (46.7)                         |
| Deadline to respond is given                       | 153 (53.7)                         |
| Use of appealing words to make the journal appear international (e.g., global, world, euro) | 48 (16.8)                      |
| Email contact information                          |                                     |
| Phone number                                       | 107 (37.5)                         |
| Street address                                     | 109 (38.2)                         |
| Email Relevance to surgeon’s discipline            |                                     |
| Previous publications by the recipient are cited in the invitation | 24 (8.4)                      |
| Invitation is related to surgeon’s specialty       | 84 (29.5)                          |
(71.2%) identified as potentially predatory in nature were associated with a website; therefore, online verification is not a reliable way of determining the legitimacy of a phishing email.

**DISCUSSION**

Receiving an email invitation to submit a manuscript should raise a red flag, given that most legitimate journals and publishers rarely solicit manuscript submissions. Based on our review, we suggest authenticating these emails by looking for characteristics indicative of a predatory email, including spelling and grammar errors, overly formal or stilted salutations, and a broad range of welcomed submission types (original articles, review articles, case reports, editorials, clinical images, letters to editors), and by consulting Beall’s list to look for the publisher or journal name.

Our institution’s information technology (IT) department estimates that on a monthly basis, an average of 21 million out of 31 million emails to 120,000 distinct users are blocked by firewalls (Alberta Health Services employee website, 2019 Nov. 28). Our data also suggest that of the 10 million emails that penetrate these firewalls, potentially one-third are phishing emails. This clearly highlights the need for improvement to firewall/sequestration practices. For an organization of 100,000 users, earning an average of $100,000 per year, and receiving 6 spam emails a day, the cost in terms of storage, management, downtime, and lost productivity has been estimated to be greater than $16 million per year.

### Table 4. Summary of predatory conference invitations sent from fake hosts

| Conference hosts                  | No. (%) of emails received, n = 267 | Present in CalTech Library listing |
|-----------------------------------|-------------------------------------|-----------------------------------|
| Conference Series LLC Ltd         | 128 (47.9)                          | Yes                               |
| BioEvents                         | 27 (10.1)                           | No                                |
| EuroSciCon                        | 21 (7.9)                            | Yes                               |
| PULSUS Group                      | 20 (7.5)                            | Yes                               |
| Allied Academies                  | 17 (6.4)                            | Yes                               |
| Scientific Federation             | 14 (5.2)                            | Yes                               |
| WONCA                             | 12 (4.5)                            | No                                |
| Meetings International Pte Ltd    | 6 (2.2)                             | Yes                               |
| WSP                               | 6 (2.2)                             | No                                |
| BioGenesis                        | 1 (0.4)                             | No                                |
| BIT Congress Inc                  | 1 (0.4)                             | Yes                               |
| OMICS International               | 1 (0.4)                             | Yes                               |
| Pharma Professionals              | 1 (0.4)                             | No                                |
| Scientific Overseas Group Conferences | 1 (0.4)                         | No                                |
| Unable to determine conference provider | 7 (2.6)                        | N/A                               |

### Table 5 (part 1 of 2). Characteristics of predatory conference invitations

| Parameters                          | No. (%) of emails received, n = 267 |
|-------------------------------------|-------------------------------------|
| Email origin                        |                                      |
| Email sent from a free provider like gmail.com | 3 (1.1)                          |
| Purported country of origin         |                                      |
| UK                                  | 124 (46.4)                          |
| None mentioned                      | 114 (42.7)                          |
| India                               | 7 (2.6)                             |
| Singapore                           | 7 (2.6)                             |
| Italy                               | 6 (2.2)                             |
| USA                                 | 6 (2.2)                             |
| Canada                              | 1 (0.4)                             |
| China                               | 1 (0.4)                             |
| Luxembourg                          | 1 (0.4)                             |
| Purported country of conference location |                                     |
| UK                                  | 31 (11.6)                           |
| USA                                 | 25 (7.9)                            |
| Spain                               | 21 (7.9)                            |
| None mentioned                      | 20 (7.5)                            |
| Japan                               | 20 (7.5)                            |
| Italy                               | 19 (7.1)                            |
| South Korea                         | 12 (4.5)                            |
| United Arab Emirates                | 11 (4.1)                            |
| Russia                              | 10 (3.7)                            |
| Singapore                           | 10 (3.7)                            |
| Australia                           | 8 (3.0)                             |
| Austria                             | 8 (3.0)                             |
| Canada                              | 8 (3.0)                             |
| Thailand                            | 8 (3.0)                             |
| Czech Republic                      | 7 (2.6)                             |
| Germany                             | 6 (2.2)                             |
| Malaysia                            | 6 (2.2)                             |
| Scotland                            | 5 (1.9)                             |
| China                               | 4 (1.5)                             |
| Ireland                             | 4 (1.5)                             |
| Switzerland                         | 4 (1.5)                             |
| France                              | 3 (1.1)                             |
| The Netherlands                     | 3 (1.1)                             |
| Norway                              | 3 (1.1)                             |
| Hungary                             | 2 (0.7)                             |
| New Zealand                         | 2 (0.7)                             |
| Portugal                            | 2 (0.7)                             |
| Denmark                             | 1 (0.4)                             |
| Greece                              | 1 (0.4)                             |
| India                               | 1 (0.4)                             |
| Turkey                              | 1 (0.4)                             |
| Sweden                              | 1 (0.4)                             |
| Email salutation                    |                                      |
| Addressed by name                   | 74 (27.1)                           |
| Generic                             | 123 (46.1)                          |
| Absent                              | 45 (16.9)                           |
| Addressed to wrong name             | 24 (9.0)                            |
| *Greetings...*                      | 110 (41.2)                          |
| Conference host online presence     |                                      |
| Organization has a website          | 190 (71.2)                          |
| External links provided within the email | 256 (95.9)                      |
Our study also identified the types of words firewalls could flag to block predatory emails. They included the names of journals and publishers listed on Beall’s list; the names of conference hosts listed on the CalTech Library list; the names of journals, publishers and conference hosts we deemed to be predatory; the word “greetings”; and the presence of obvious spelling and/or grammar errors.

**Conclusion**

In our experience, unsolicited emails mostly consisted of invitations from predatory publishers with associated (or stand-alone) journals seeking manuscript submissions. Emails from predatory conference hosts inviting recipients to attend or present at a fake conference are also frequent. The costs associated with this type of spam in large organizations can be in the millions of dollars. These emails shared common characteristics which, together with PubMed’s indexed list, as well as both Beall’s list and the CalTech Library list, can be used by recipients to distinguish between legitimate and predatory invitations.

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| Parameters                                             | No. (%) of emails received, n = 267 |
|--------------------------------------------------------|-------------------------------------|
| An “unsubscribe” mechanism is available                | 231 (86.5)                          |
| Disclaimer present at the end of the email             | 91 (34.1)                           |
| Email language                                        |                                     |
| Presence of spelling or grammar errors                 | 195 (73.0)                          |
| Use of flattery                                        | 114 (42.7)                          |
| A conference date is provided                          | 224 (84.0)                          |
| Use of appealing words to make the conference appear international (e.g., global, world, euro) | 200 (74.9)                          |
| Email relevance to surgeon’s specialty                 |                                     |
| Previous publications by the recipient are cited in the invitation | 3 (1.1)                             |
| Invitation is related to surgeon’s specialty           | 5 (1.4)                             |