

## Sir, YouTube as a source of information about retinitis pigmentosa

The internet is an increasingly important health-care resource, providing users with rapid, inexpensive access to medical information. Video streaming websites, such as YouTube, the third most visited website, are the key providers of this information.<sup>1,2</sup> Despite being a major source of health-care information, YouTube is not peer-reviewed and its content is not screened for scientific accuracy prior to being uploaded.

The authors sought to categorise videos relating to retinitis pigmentosa on YouTube, both by factual accuracy and by source. The first 10 pages of results generated by searching 'retinitis pigmentosa' were reviewed (1/6/2012). The sample consisted of 162 videos, which were watched by two independent researchers and categorised as 'useful', 'misleading', or 'no information'. 'Useful' videos contained scientifically accurate information and/or useful information on social

aspects of the illness. 'Misleading' videos contained scientifically unproven information, such as claims of acupuncture or faith-healing completely restoring vision. 'No information' videos contained no content relevant to RP. Videos were also classified according to the source; charity, independent user, medical professional, popular media, university, and medical advertisement.

We found 82 videos to be misleading; 78 of these were classified as medical advertisements. Only 51 videos provided useful, with scientifically accurate content (Table 1). In total, the videos received over 150 000 views annually. Charities, medical professionals, and universities were the most likely to upload useful videos (Table 2). Videos uploaded by independent users generally focused on the social impact of RP (Table 3). These results differ significantly from previous evaluations of medical content on YouTube, which found that <20% of the videos were misleading.<sup>3,4</sup> These studies employed similar methodology but investigated conditions with established medical treatments.

**Table 1** Categorisation according to value of content

| Categorisation                  | Useful    | Misleading | No information |
|---------------------------------|-----------|------------|----------------|
| Number of videos (%)            | 51 (31.5) | 81 (50)    | 30 (18.5)      |
| Total duration                  | 06:25:09  | 07:15:09   | 01:27:27       |
| Mean duration                   | 00:07:33  | 00:05:23   | 00:02:55       |
| Mean likes                      | 6.6       | 2.0        | 2.1            |
| Mean dislikes                   | 0.2       | 0.1        | 0.1            |
| Total views (000s)              | 115.7     | 137        | 39.5           |
| Percentage of total views       | 39.6      | 46.9       | 13.5           |
| Average views per video         | 2224.2    | 1690.8     | 1315.7         |
| Average number of days on YT    | 863.3     | 672.4      | 693.6          |
| Average views per video per day | 2.5       | 1.7        | 1.6            |

**Table 2** Information provided by all videos stratified for source

| Source                     | Total videos | Useful (%) | Misleading (%) | No information (%) |
|----------------------------|--------------|------------|----------------|--------------------|
| Charity                    | 16           | 15 (93.3)  | 0 (0)          | 1 (6.7)            |
| Independent user           | 26           | 9 (34.6)   | 0 (0)          | 17 (65.4)          |
| Health information website | 8            | 5 (62.5)   | 1 (12.5)       | 2 (25)             |
| Medical professional       | 6            | 5 (83.3)   | 0 (0)          | 1 (16.7)           |
| Popular media              | 16           | 12 (75)    | 2 (12.5)       | 2 (12.5)           |
| University                 | 6            | 4 (66.7)   | 0 (0)          | 2 (33.3)           |
| Medical advertisement      | 84           | 1 (1.2)    | 78 (92.9)      | 5 (6)              |

**Table 3** Analysis of all useful videos stratified for video source

|                                 | Charity  | Independent user | Health info website | Medical professional | Popular media | University | Medical advertisement |
|---------------------------------|----------|------------------|---------------------|----------------------|---------------|------------|-----------------------|
| Videos                          | 15       | 9                | 5                   | 5                    | 12            | 4          | 1                     |
| Percentage of all useful videos | 29.4     | 17.6             | 9.8                 | 9.8                  | 23.5          | 7.8        | 2.0                   |
| Total duration                  | 01:18:09 | 00:35:21         | 00:25:41            | 00:53:23             | 00:54:03      | 02:25:24   | 00:00:57              |
| Mean duration                   | 00:05:13 | 00:03:56         | 00:03:13            | 00:10:41             | 00:04:30      | 00:36:21   | 00:00:57              |
| Average days on YouTube         | 886.4    | 747.9            | 657.8               | 774                  | 1040.2        | 795.3      | 292                   |
| Mean likes                      | 66       | 4.7              | 5                   | 9.8                  | 11.0          | 5.5        | 0                     |
| Mean dislikes                   | 0        | 0.2              | 0.2                 | 0.8                  | 0.2           | 0          | 0                     |
| Views                           | 40966    | 10937            | 7943                | 16884                | 27124         | 11594      | 68                    |
| Percentage of total viewership  | 35.5     | 9.5              | 6.9                 | 14.6                 | 23.5          | 10.0       | 0.1                   |
| Mean views per video per day    | 4.6      | 1.5              | 2.4                 | 4.1                  | 2.4           | 3.2        | 0.2                   |
| Symptoms                        | 6        | 5                | 5                   | 4                    | 9             | 4          | 1                     |
| Epidemiology                    | 3        | 1                | 0                   | 1                    | 3             | 1          | 0                     |
| Pathology                       | 1        | 1                | 0                   | 5                    | 5             | 3          | 0                     |
| Aetiology                       | 5        | 3                | 3                   | 3                    | 5             | 3          | 0                     |
| Diagnosis                       | 4        | 2                | 0                   | 0                    | 1             | 2          | 0                     |
| Treatment (vitamin A)           | 5        | 1                | 0                   | 3                    | 8             | 3          | 0                     |
| Visual aids                     | 4        | 2                | 3                   | 2                    | 3             | 0          | 1                     |
| Prognosis                       | 7        | 5                | 5                   | 3                    | 9             | 3          | 0                     |
| Social                          | 11       | 7                | 3                   | 0                    | 5             | 2          | 0                     |
| Clinical variability            | 2        | 1                | 3                   | 1                    | 4             | 3          | 0                     |

The authors believe the high incidence of misleading videos regarding RP result from the lack of effective medical treatments for the condition. Patients frustrated at the lack of treatment available in the clinic turn to the internet, seeking potential treatments. Unfortunately, YouTube provides an excellent platform for the unregulated advertisement of unproven and often expensive alternative therapies. We therefore recommend that RP patients be directed towards reliable, peer-reviewed information sources and be advised that content on open-access websites is commonly misleading.

#### Conflict of interest

The authors declare no conflict of interest.

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Sir,

#### The role of antibiotics in the prevention of post-intravitreal anti-VEGF endophthalmitis: primum non nocere!

I have read the article by Ghasemi Falavarjani and Nguyen with great interest,<sup>1</sup> which summarizes the best available evidence on adverse events and complications associated with intravitreal injections of anti-VEGF. However, some important papers on the role of antibiotics in the prevention of post-intravitreal anti-VEGF endophthalmitis (PIAE) were not referenced and some important issues need more thorough discussion.

It was shown in several retrospective studies that pre-injection and post-injection antibiotic treatment is not supported by sufficient evidence of efficacy.<sup>2</sup>

This was also recently supported by the prospective study, which however additionally presented significant

risk factors for PIAE, ie no topical antibiotic immediately before injection, no immediate post-injection topical antibiotic, subconjunctival anesthesia, blepharitis, and squeezing during injections.<sup>3</sup>

It is of increasing awareness that antibiotic use causes antibiotic resistance and that globally antibiotics are overused in different fields of medicine, including ophthalmology.<sup>4</sup> This may lead to loss of activity of major antibiotics and inability to use them in future, increase in multidrug resistance, increase in infections caused by antibiotic-resistant bacteria, and increase in health-care costs. The prognosis of the infections caused by antibiotic-resistant bacteria is much worse, and treatment is much more complicated.

The ARCANE (Antibiotic Resistance of Conjunctiva and Nasopharynx Evaluation), a prospective and longitudinal study, analyzed distant effects on bacterial resistance to repeated use of topical antibiotics. It was recently summarized and confirmed that repeated use of topical antibiotics on the conjunctival sac increases the rate of resistance of CNS to antibiotics.<sup>5</sup>

For many years antibiotic use in PIAE, although lacking convincing scientific evidence of efficacy, was based on empiric rationale and believed to be not harmful. Nowadays, we are aware that using antibiotics without clear benefit might be harmful.

Thus, we should carefully analyze all available scientific data on the topic and use antibiotics only when justified.

#### Conflict of interest

The author declares no conflict of interest.

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