



# THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### Maximising the impact of your work using infographics

**Citation for published version:**

Murray, I, Murray, A, Wordie, S, Oliver, CW, Murray, A & Simpson, H 2017, 'Maximising the impact of your work using infographics', *Bone & Joint Research*. <https://doi.org/10.1302/2046-3758.611.BJR-2017-0313>, <https://doi.org/10.1302/2046-3758.611.BJR-2017-0313>

**Digital Object Identifier (DOI):**

[10.1302/2046-3758.611.BJR-2017-0313](https://doi.org/10.1302/2046-3758.611.BJR-2017-0313)

[10.1302/2046-3758.611.BJR-2017-0313](https://doi.org/10.1302/2046-3758.611.BJR-2017-0313)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Version created as part of publication process; publisher's layout; not normally made publicly available

**Published In:**

Bone & Joint Research

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.





## ■ EDITORIAL

# Maximising the impact of your work using infographics

**I. R. Murray,  
A. D. Murray,  
S. J. Wordie,  
C. W. Oliver,  
A. W. Murray,  
A. H. R. W. Simpson**

*The British Editorial Society of Bone & Joint Surgery, London, United Kingdom*

- I. R. Murray, BMedSci(Hons), MRCS, MFSEM, PhD, Clinical Lecturer, Department of Orthopaedics and Trauma,
- S. J. Wordie, BSc(Hons), Medical Student,
- C. W. Oliver, BSc, MB BS, FRCS(Tr&Orth), FRCS(Ed&Eng), FRCP(Ed), DM, DMI RCSEd, Consultant Orthopaedic Surgeon and Professor of Physical Activity for Health, University of Edinburgh, Old Dalkeith Road, Edinburgh, EH16 4SA, UK.
- A. D. Murray, MRCP, FFSEM, FRCP(Glas), Consultant in Sport and Exercise Medicine, University of Edinburgh, Old Dalkeith Road, Edinburgh, EH16 4SA, and European Tour Golf, Wentworth Drive, Virginia Water, GU25 4LX, UK.
- A. W. Murray, BSc(Hons) MD FRCS(Tr&Orth), Consultant Orthopaedic and Trauma Surgeon, Royal Hospital for Sick Children, Sciennes Road, Edinburgh, EH9 1LF.
- A. H. R. W. Simpson, MA(Cantab), DM (Oxon), FRCS(England & Edinburgh), George Harrison Law Professor of Orthopaedic Surgery, Royal Infirmary of Edinburgh, Editor-in-Chief, Bone & Joint Research, 22 Buckingham Street, London WC2N 6ET, UK.

Correspondence should be sent to A. H. R. W. Simpson; email: editorbjr@boneandjoint.org.uk

doi: 10.1302/2046-3758.611.  
BJR-2017-0313

*Bone Joint Res* 2017;6:1–2.

‘Science advances only if knowledge is shared’ (Warnick<sup>1</sup>)

Medical science is a cumulative process. Its progress and benefits to society rely on scientists and clinicians building on each other’s work. Scientists and clinicians unaware of practice changing literature cannot change their practice. As a science community, we spend long hours ensuring the highest standards in our research, but frequently fall short in efforts to ensure the resulting data is presented in an engaging fashion, and is shared widely.

Presenting information with graphics enhances understanding.<sup>2</sup> This is not a new concept. Florence Nightingale’s graphical representation of causes of mortality amongst British forces in the Crimean war illustrated forcefully that death from preventable disease outnumbered other causes including battle wounds. Our ability to process and recall information is superior if learnt with visual inputs.<sup>3</sup> Visual instructions for building flat-pack furniture is more effective than text-based instructions,<sup>4</sup> and a text only powerpoint is of limited appeal to most.

Information graphics or infographics utilise images and data visualisations to present research in an engaging way. Infographics add value by increasing understanding and the reach of research. Information is more likely to be retained if it was learnt from an infographic than from text alone.<sup>5</sup> Articles associated with a visual abstract are three times more likely to be viewed than articles published with text-only abstracts and significantly increase alternative metrics or ‘altmetrics’.<sup>6,7</sup>

It is well worth investing the time to get an infographic right. Researchers should take ownership of the content and design of their infographic. However, there are an increasing number of software packages that can help in the production of infographics, most

requiring only limited computing ability. Online libraries of graphics and illustrations are also available through websites such as Shutterstock and Pixabay. For specialist support, there is a well-established industry in the production of infographics, many of whom have particular expertise in scientific research communication.

Here we discuss some principles of infographic design and make some suggestions for creating engaging infographics:

**(i) Target your audience.** It is important to be clear for whom the infographic is intended to reach. Visuals that are created for a scientific, but non-specialist, audience can make the research more accessible to a broader audience. Providing context and removing technical jargon, will ensure that your work is accessible to the widest possible audience.

**(ii) Use a compelling title to attracting readers.** Consider the “breaking news headline” of your research. This is often the most impactful finding of the study, and is frequently shorter than the full article headline.

**(iii) Provide a narrative.** Effective infographics frequently use lines and arrows to guide readers through the information on a graphic. Having a clear start and end ensures that the readers process the information in the order you intend and make sure that no information is missing. Consider “nodes” of information that may relate to specific experiments or chapters in the research story. The ‘no text test’ can be used to establish whether the key messages are conveyed when the text is removed.<sup>8</sup>

**(iv) Emphasise key messages.** Key messages can be prioritised by increasing the size of the relevant component as well as increasing text size and using striking colours. Like traditional abstracts, infographics are used to provide an overview of research, but are not intended to be a substitute for reading a full research paper.

**(v) Balance images, charts and text.** It is important to balance data visualisations (pie charts, line graphs, bar graphs), images and words. Try to limit text to striking titles, brief annotations and bullet points. In general, text-light, image-dense infographics are most successful.<sup>9</sup>

**(vi) Limit the number of colours and fonts.** Use three to five complementary colours and limit the number of font types to a maximum of three.<sup>8,10</sup>

The success of any infographic depends on a well-thought-out dissemination plan. Social media is now a much used and helpful tool for the dissemination of new research and the visual appeal of infographics are particularly suited to these platforms. Infographics are shared eight times more on social media compared with text-only summaries,<sup>7</sup> and research articles accompanied by an infographic are accessed more frequently than those without.

We urge readers to start using infographics.

## References

1. **Warnick W.** The Knowledge Investment Curve. <https://www.osti.gov/home/ostiblog/knowledge-investment-curve> (date last accessed 23 October 2017).
2. **Spiegelhalter D, Pearson M, Short I.** Visualizing uncertainty about the future. *Science* 2011;333:1393-1400.
3. **Smiciklas M.** The power of infographics. using pictures to communicate and connect with your audiences. Indianapolis: Que Publishing, 2012.
4. **Antifakos S, Michahelles F, Schiele B.** Proactive instructions for furniture assembly [abstract]. *UbiComp Meeting, Göteborg, Sweden, 2002.*
5. **Scott H, Fawkner S, Oliver C, et al.** Why healthcare professionals should know a little about infographics. *Br J Sports Med* 2016;50:1104-1105.
6. **Thoma B, Murray H, Huang SYM, et al.** The impact of social media promotion with infographics and podcasts on research dissemination and readership. *Cjem* 2017:1-7.
7. **Ibrahim AM, Lillemoe KD, Klingensmith ME, et al.** Visual abstracts to disseminate research on social media: a prospective, case-control crossover Study. *Annals of surgery* 2017.
8. **Scott H, Fawkner S, Oliver CW, et al.** How to make an engaging infographic? *Br J Sports Med* 2017;51:1183-1184.
9. **Lyra KT, Isotani S, Reis RC, et al.** Infographics or Graphics and Text: Which Material is Best for Robust Learning? [abstract]. *Proceedings of the IEEE International Conference on Advanced Learning Technologies (ICALT)*, 2016.
10. **Stones C, Gent M.** 7 G.R.A.P.H.I.C. Principles of public health infographic design [http://www.improvementacademy.org/documents/Projects/air\\_quality/The%207%20Graphic%20Principals%20of%20Public%20Health%20Infographic%20Design.pdf](http://www.improvementacademy.org/documents/Projects/air_quality/The%207%20Graphic%20Principals%20of%20Public%20Health%20Infographic%20Design.pdf). (date last accessed 23 October 2017).

### Funding Statement

- None declared

### Author Contribution

- I. R. Murray: Writing the paper.
- A. D. Murray: Writing the paper.
- S. J. Wordie: Writing the paper.
- C. W. Oliver: Writing the paper.
- A. W. Murray: Writing the paper.
- A. H. R. W. Simpson: Writing the paper.

### ICMJE COI Statement

- None declared

© 2017 Simpson et al. This is an open-access article distributed under the terms of the Creative Commons Attributions licence (CC-BY-NC), which permits unrestricted use, distribution, and reproduction in any medium, but not for commercial gain, provided the original author and source are credited.