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# HOW TO MAKE A SCIENTIFIC POSTER

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# What we will cover

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- What makes a good poster
- Tools to develop a poster
- Promoting and presenting your poster

# What is a poster?

A poster is a visual abstract of your research, project, organisation or initiative...

It's not a bottomless pit where you dump everything about a given topic or piece of work!

**HISTORY**  
RAISE was invited to attend a workshop to inform draft guidelines on social and emotional wellbeing in primary and secondary education.

**QUESTION**  
What needs to be addressed in the guidelines for young people?

**FINDINGS**  
Awareness and education on invisible illnesses in school.  
Need for regular pastoral care, flexibility and recognition of individual needs.  
"Children need to be inspired and feel valued, so they can build confidence and self-esteem."

Better communication between young people, teachers and healthcare professionals.  
Signposting towards support.  
Help to stay safe online.  
Individual needs of every young person.  
Easier access to Education, Health and Care Plans (EHCPs) for families.  
Awareness and support to process and manage community concerns.

**WHAT THIS MEANS TO ME**  
RAISE will share these views during the workshop, to ensure the voice of young people is represented. RAISE will share the draft outline for the guidelines once it is published.

Identifying items for consideration under the terms of the National Institute For Health and Care Excellence (NICE) guideline on social and emotional wellbeing in primary and secondary education. Simon A. Jones, South Research, Sunny Research, Jennifer Proctor, Roger Cloutier and Marie Rose (2019).



## Methotrexate dosing errors for people with inflammatory diseases

A survey of people with autoimmune and autoinflammatory diseases, conducted by the International Foundation for Autoimmune and Autoinflammatory Arthritis (IFAA)

In Europe, methotrexate is authorised for the treatment of certain cancers and autoimmune/autoinflammatory diseases. For cancer, daily doses tend to be used whereas for autoimmune/autoinflammatory diseases, weekly doses are used. The European Medicines Agency (EMA) have started a review of the risk of dosing errors with methotrexate medicines, because of reports of mistakes leading to some people receiving a dose every day instead of every week. Here, we report on a survey we conducted to explore dosing error experiences and to identify measures to reduce dosing errors from taking place.

### Experiences of errors.

72% currently took methotrexate.  
28% had previously taken methotrexate.  
10% had experience of a dosing error or a concern regarding methotrexate.



### Suggestions to reduce errors.



68% of participants had RA.  
Improved communication from professionals about methotrexate

Consideration for those with fatigue, multiple conditions and memory problems, and age

39 participants.

Australia, Bulgaria, Canada, Germany, Iceland, Sweden, United Kingdom and United States of America



# Posters of congress abstracts

**Introduction:** Childhood-onset rheumatic and musculoskeletal diseases (RMDs) can influence multiple aspects of a young person's life. The journey towards adulthood spans several years, where young people develop a set of tools to cope with new situations. Self-management is an integral part of this process, and smartphone applications (apps) represent an innovative and efficient method of promoting self- and shared-management of RMDs.

**Objectives:** This scoping review aims to understand how existing smartphone apps have been developed and evaluated for young people with RMDs.

**Methods:** Eligible studies published between 2000 and 2017 were identified through a comprehensive search of four bibliographic databases. The search strategy included MeSH subject headings and free-text search terms relating to young people, digital technology and RMDs. The quality of included studies were assessed using the Mixed Methods Appraisal Tool.

**Results:** The combined bibliographic searches identified 576 articles. Once duplicates were removed, 441 titles and abstracts were screened, 19 of which were eligible for a full-text review. Following full-text review, 11 articles were suitable for inclusion. Of these, three articles were peer-reviewed journal articles, while eight were conference proceedings. Out of 11 included articles, eight studies were described as involving juvenile idiopathic arthritis (JIA) and two involving systemic lupus erythematosus (SLE). All eight studies focused on educating young people with RMDs about their conditions. Three studies had developed apps to record and communicate pain experiences associated with JIA, while others focused on wider self-management skills. The heterogeneity in the design, evaluation and delivery of apps was noticeable, with clear similarities in the needs of young people with different RMDs. Common findings from all studies included the need to develop apps across multiple platforms and devices which do not require wireless or cellular data to be functional. There were, however, some shared styles to developing apps among the included studies. Some method of user testing and iterative cycle of designing and refining the apps was observed: The Assessment, Design, Development, Implementation and Evaluation (ADDOE) model was used in one study, while four studies used an iterative process of designing and refining, based on the hermeneutical circle concept. A collaborative concept generating and requirements gathering methodology was used in another study, while the Medical Research Council's Framework for the development and evaluation of complex interventions was used in another.

**Conclusion:** This scoping review highlights that there is little empirical evidence published which describes the development of smartphone apps for young people with RMDs. Of the available evidence, approaches appear fragmented and pragmatic, suggesting the need to standardisation to facilitate the consolidated and demanding processes required to develop apps.

**Declarations of interest:**  
None Declared.

## Developing, evaluating and implementing smartphone applications for young people with rheumatic and musculoskeletal diseases: a scoping review of empirical research

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### Introduction

Childhood-onset rheumatic and musculoskeletal diseases (RMDs) can influence multiple aspects of a young person's life.  
The journey towards adulthood spans several years, where young people develop a set of tools to cope with new situations.  
Self-management is an integral part of this process, and smartphone applications (apps) represent an innovative and efficient method of promoting self- and shared-management of RMDs.  
However, there are no standardised processes for the development of health-focused apps for young people with RMDs.

### Methods

Four bibliographic databases were searched: MEDLINE, EMBASE, CINAHL, and PsycINFO.  
Eligible studies were published between 2000 and April 2017.  
Search terms were related to young people, digital technology and RMDs.  
A two-stage screening process was conducted against a pre-specified inclusion criteria.  
Studies were assessed for quality using the Mixed Methods Appraisal Tool.  
Data were analysed thematically.

### Aim

To understand how existing smartphone apps have been developed and evaluated for young people with RMDs.

### Results



Four qualitative studies.  
Three multi-method studies.

Six studies focused on juvenile idiopathic arthritis (JIA).<sup>1-6</sup>

Two studies focused on systemic lupus erythematosus (SLE).<sup>7,8</sup>

### Education and empowerment

Apps aimed to educate young people by:  
Providing mechanisms to enable them to record and communicate their pain experiences.  
To develop wider self-management skills, including disease management and coping strategies.  
Using gamification techniques to empower young people.

### Development models and styles

Five studies included some form of iterative design and refinement. These included:  
The Assessment, Design, Development, Implementation and Evaluation (ADDOE) model.  
An iterative process of designing and refining, based on the hermeneutical circle concept.  
A collaborative concept-generating and requirements-gathering methodology with multiple stakeholders.  
The Medical Research Council's Framework for the Development and Evaluation of Complex Interventions.  
Participatory methods, involving all relevant stakeholders in the design and evaluation of apps.

There were no references to theoretical stances informing app development.

### Functionality

It was clear that apps should be accessible across multiple platforms (e.g. iOS and Android), and across multiple devices (e.g. smartphones, smartwatches and tablet). Young people also felt that apps should be functional in the absence of wireless or cellular data.

135 articles identified through database searching  
n = 576

Title and abstract of articles screened  
n = 441

Full-text articles assessed for eligibility  
n = 119

Articles included for data extraction  
n = 11

4 Peer-review journal articles  
7 Conference proceedings  
10 Duplicate articles removed  
n = 138

Articles excluded  
n = 102

Articles excluded with reasons  
n = 8

### Key messages

There is little evidence which describes the development of apps for young people with RMDs in detail, and underpinning theory guiding app development.  
Approaches to app development appear pragmatic. However, there were some shared findings, such as functional requirements, educational contents and components.  
Apps should be developed with all relevant stakeholders from the outset.  
There is a need to standardise the development, evaluation and implementation of apps, to facilitate the consolidated app development process.

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# Advantages and disadvantages of poster presentations

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## Advantages

Enables **two-way dialogue** about a particular topic.

Great for **networking**.

**Visual** communication.

## Disadvantages

Can be **time-intensive** to design and expensive to print.

Can be considered **less formal/professional** than oral presentations.

Can be difficult to **transport**.

# A four-stage process

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1

Setup and sizing

3

Design

2

Core ingredients

4

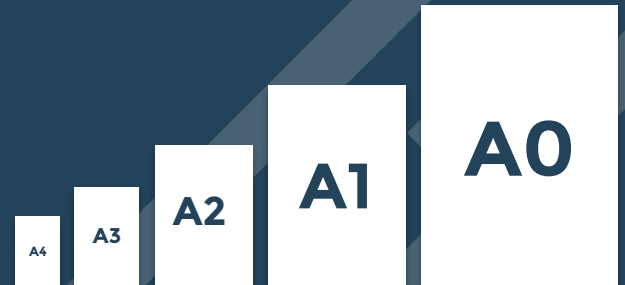
Review and next  
steps

# 1. Setup and sizing: Poster size

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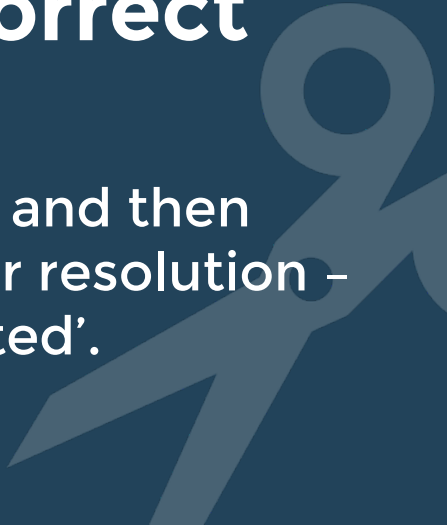
- Check for available presenter guidelines.
  - Poster hanging board size.
  - Poster size (typically A0/A1) and orientation (portrait or landscape).
    - A0 841 x 1189 mm
    - A1 594 x 841 mm
    - A2 420 x 594 mm
    - A3 297 x 420 mm
    - A4 210 x 297 mm



# 1. Setup and sizing: Poster size

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- Identify an existing **template**, or create your own.
  - Ensure the document is the **correct size at the outset**.
    - Setting up posters in A4 ‘normal’ paper size, and then attempting to print at A0 will result in a poor resolution – with the poster looking ‘unclear’ and ‘pixelated’.
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## 2. Core ingredients: Know your audience

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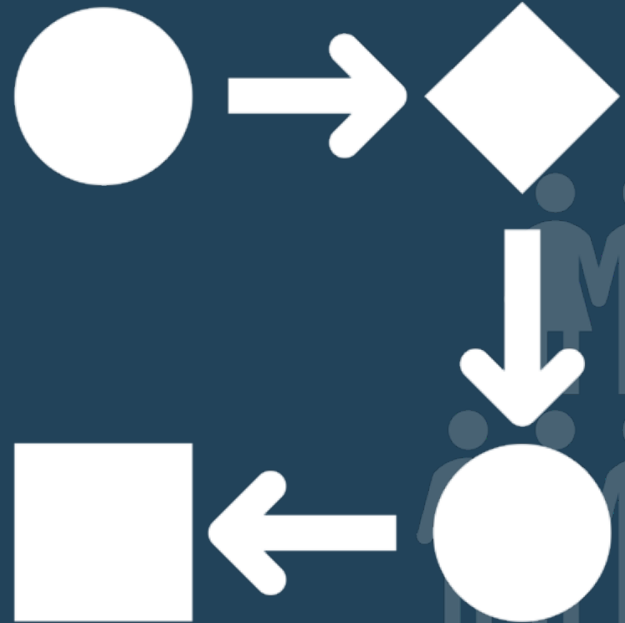


- Patients/carers
- Academic/  
healthcare  
professionals
- Policy makers
- *Multiple  
audiences*

## 2. Core ingredients: Contents

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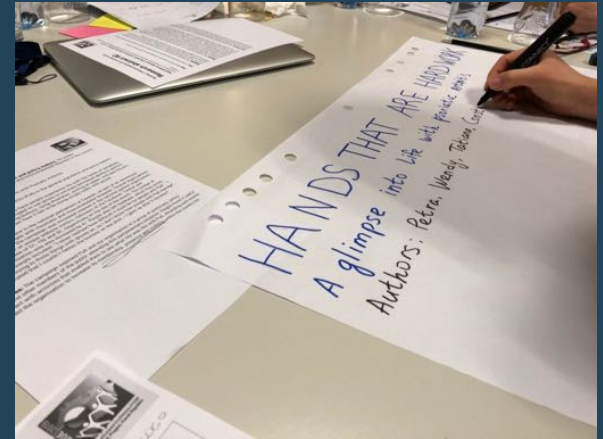
- Title
- Author(s) and affiliation(s)
- Introduction
- Aims/objectives
- Materials and methods
- Results
- Conclusions
- Acknowledgments



## 2. Core ingredients: Storyboarding

To start off, begin with pen and paper! Design the first, rough visualisation of your poster.

- There's no need for content/data at this stage.
- Rather, visualise dimensions and where you want to place things.

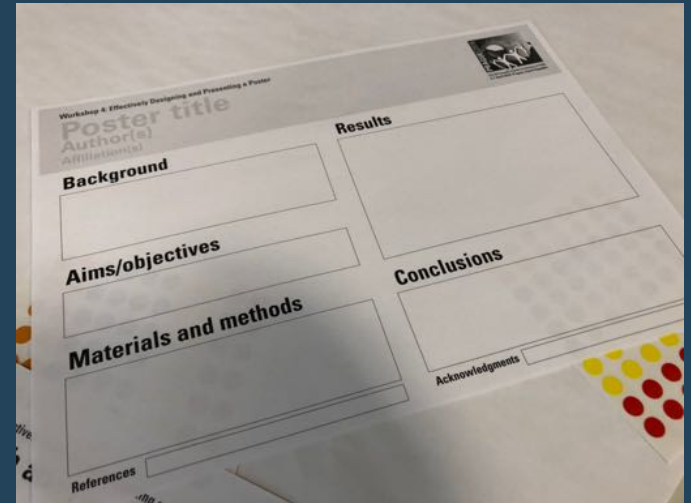


# 3. Design: Layout

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- **Let it breathe**
  - Don't overload the poster.
- **Keep things aligned**
  - Invisible grids help to provide a professional look.
- **Guide the reader**
  - People's natural tendency is to read from left to right, then top to bottom.



# 3. Design: Layout (#betterposter)

The poster layout is divided into three main vertical sections:

- Left Sidebar (White background):**
  - Title** and *Authors*
  - Intro**: Three horizontal bars representing text.
  - Methods**: A numbered list (1-4) with horizontal bars.
  - Results**: A line graph with four colored lines (green, yellow, orange, blue) showing fluctuating trends. Below it are three horizontal bars.
  - Discussion**: Three horizontal bars.
  - A small circular logo at the bottom left.
- Central Panel (Dark Green background):**
  - Text: **Main finding** goes here, translated into **plain english**. **Emphasize** the important words.
  - A QR code at the bottom left.
- Right Sidebar (White background):**
  - Extra Tables & Figures**: A table with multiple rows and columns of data.
  - A line graph with two lines (red and blue) showing an overall upward trend.
  - Additional text and a small table at the bottom.

# 3. Design: Proportions and sizes

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- The proportions of each section of the poster will depend on the need for the poster, as well as the content.
- In general, the **results and conclusions** are key sections of any poster – particularly the **take home messages**.

3 Peer-reviewed articles and 8 conference proceedings, together describing 8 studies

## Key messages

- 1 There is little evidence which describes the development of apps for young people with RMDs in detail, and underpinning theory guiding app development.
- 2 Approaches to app development appear pragmatic. However, there were some shared findings, such as functional requirements, educational contents and components.
- 3 Apps should be developed with all relevant stakeholders from the outset.
- 4 There is a need to standardise the development, evaluation and implementation of apps, to facilitate the convoluted app

# 3. Design: Fonts

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- **The largest possible fonts**
  - A rule of thumb is that 30 pt is visible from 1.8 metres.
- **Good or bad fonts can make or break a poster**
  - Be consistent.
  - Use two complementary fonts.
  - Avoid word art.



**Good title**

Good body text



**Bad title**

Bad body text

# 3. Design: Colours

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- Don't be afraid of using **background colours**, with text in boxes – colour can help to attract people to the poster.
- **Font colour must contrast** highly with its background.
  - Consider people who may not be able to distinguish between colours, and those who have dyslexia (e.g. light but not white background).
- Beware of **subconscious messaging** with the colours you select (e.g. red can induce anxiety, green can convey relaxation).

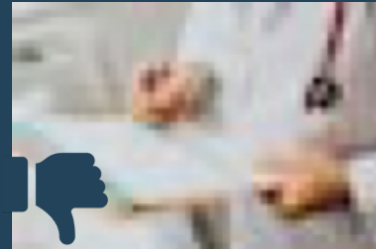


# 3. Design: Visuals

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- Use good quality images with the correct permissions
- Use consistent colours and fonts with graphs and figures
- Visuals should enhance the poster message



# 4. Review and next steps

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- Send your poster to colleagues for comment.
- Print out your poster (on A4) to spot easy mistakes.
- Find a printing service to print your poster (if face-to-face).
  - Think about paper type (e.g. gloss, matte, laminated, fabric).
  - Look around for the most cost-effective/convenient option.
- Use a cardboard/plastic tube to transport your poster, or use fabric for a more convenient option.

# Find what works for you

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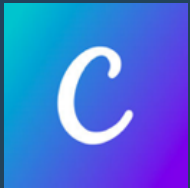
Microsoft  
PowerPoint

**Pros:** Popular program, user-friendly tools, accessible on Mac/PC.  
**Cons:** Expense if organisation doesn't provide the program.



Pages

**Pros:** User-friendly interface and tools.  
**Cons:** Accessible only to Mac users.



Canva

**Pros:** User-friendly interface and tools, accessible across multiple platforms, online storage, templates, free options.  
**Cons:** Limited tools on the free package, requires internet access.

Other examples include: Adobe InDesign, Adobe Illustrator and Scribus.

# Top tips for presenting

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Poster sessions are great places for **networking**, so take business cards or leaflets with you in person, and make sure to be 'by your poster' if the conference is online.

Know your poster! You only have a small amount of time to engage people. Keep it concise, but informative, and don't forget to **emphasise your key messages!**

Provide **handouts of your poster or a QR code** for people to access the poster after they walk away (physically or virtually)!

Think about online promotion too, storing on your organisation website, or repositories like ResearchGate and FigShare.

A long, straight asphalt road stretches from the foreground into the distance, flanked by fields and trees. The sky is filled with large, dark, dramatic clouds, suggesting a sunset or sunrise. The overall mood is contemplative and forward-looking.

**“Even  
perfection has  
room for  
improvement.”**

## **Simon R. Stones BSc (Hons) MMRS**

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*Recognised on the Power 100 List*

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