

# Investing in sepsis research: systematic analysis of UK public and philanthropic funding 1997–2010

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## Objective

Sepsis is a life-threatening systemic inflammatory response caused by severe infection.<sup>1</sup> Investments in biomedical, clinical and operational research are poorly documented.<sup>2</sup> Recent studies have attempted to map and evaluate investments in infectious disease research in the UK and the gender of the principal investigators.<sup>3,4</sup> We aimed to analyse the UK investments in sepsis research.

## Design

A systematic analysis of infectious disease research funding to UK institutions was conducted. A total of 6615 infection-related studies by public and philanthropic funding organisations were included in the full analysis. We included all sepsis-related research for the period 1997 to 2010 and studies where the lead institution was in the UK. We excluded open-access data from the pharmaceutical industry, as it was under-representative of the total research undertaken by the industry.

## Setting

Research institutions in the UK and their global partners.

## Participants

A total of 6,165 infection-related studies and 79 sepsis-related studies were included in this systematic analysis.

## Main outcome measures

Variables collected included study title, abstract, total funding for the study, lead institution, funding

organisation, principal investigator and year of award. Studies were categorised by disease, crosscutting theme and research and development (R&D) value chain. Funding awarded in currency other than UK pounds (£) was converted using the mean exchange rate in the year of award. Funding was adjusted for inflation and reported in 2010 UK pounds. Studies were categorised and double-checked by two authors. Fixed marginal kappa score was 0.950, suggesting a high level of agreement.

## Results

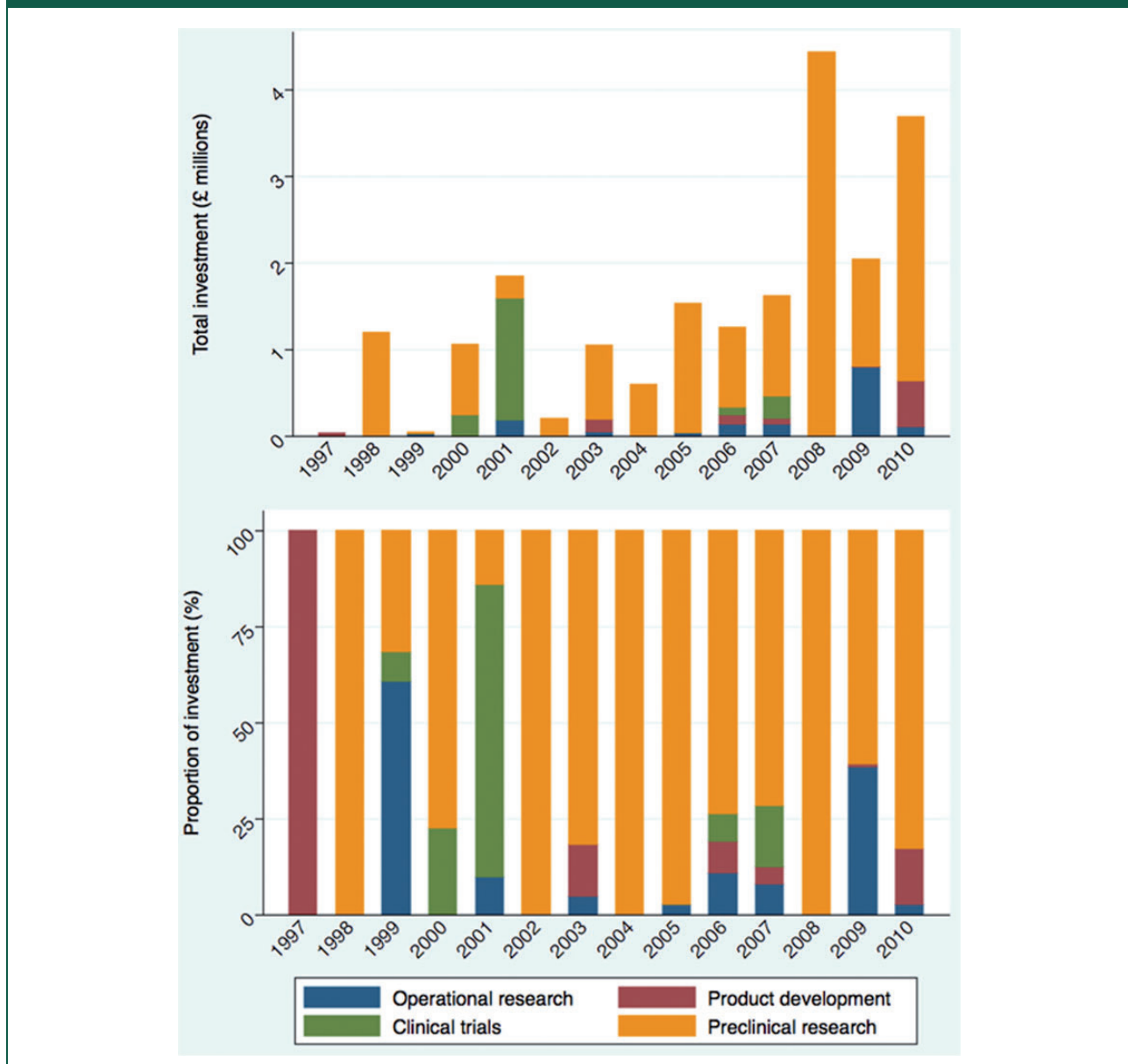
We identified a total research investment in sepsis of £20.6 million across 79 studies, accounting for 0.79% of total research investment in infectious diseases, which was £2.6 billion.

Figure 1 shows investment by R&D value chain. Preclinical research attracted the most investment with £16.3 million (78.9%) followed by phase 1, 2, 3 clinical trials with £2.0 million (9.7%) and epidemiological and operational research with £1.4 million (7.0%). Product development research was the least well-funded type of research by public and philanthropic funding organisations with £0.9 million (4.4%).

Assessing by gender of the principal investigator, men were awarded 84.8% of total funding, with women receiving 15%.

Diagnostic tools for control accounted for £2.0 million (9.5%). Studies assessing therapeutic options accounted for £6.0 million (29.0%).

Public funding accounted for £10.9 million (53.1%) across 36 studies with philanthropic funding awarding £9.3 million (44.9%) across 28. The leading funding organisations to support this work included the Medical Research Council with £8.8 million (43.1%), followed by the Wellcome Trust with £4.6 million (22.2%).

**Figure 1.** Investment in sepsis research by R&D pipeline over time.

## Conclusions

We present the first detailed analysis of funding awarded for sepsis research to UK institutions and their global partners.

Sepsis receives a small amount of funding compared with other infectious diseases, despite its significant burden of disease. We anticipate this study to underestimate the total investment in sepsis research, as findings from certain studies that were not explicitly looking at sepsis may still have an impact more broadly. We urge the pharmaceutical industry to openly publish their investment

data, in order to reduce unnecessary duplication of research and enhance the allocation of scarce resources.<sup>5</sup>

It is essential we map, monitor and evaluate research funding given the importance of sepsis and infectious diseases to global health.

## Declarations

**Competing interests:** None declared

**Funding:** None declared

**Ethical approval:** Not required

**Guarantor:** JRF

**Contributorship:** MGH designed the study. JRF analysed the data and created the figure with input from MGH and RA. JRF interpreted the data and wrote the draft and final versions with input from MGH and RA. All authors reviewed and approved the final version.

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**Provenance:** Not commissioned; peer-reviewed by Peter Kemp

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