Web appendix 1: Segmented regression with one group—model to get an estimate of the difference between pre and post intervention

Overall, there were 48 monthly intervals: 25 prior to the publication of the CONSORT for Abstracts guidelines (January 2008), three during the transition period to accommodate a gradual implementation (between February 2008 and April 2008), and 20 after the intervention (we considered that the beginning of the intervention was May 2008). The three month transition period was excluded from the statistical models.

Model

A time-series segmented linear regression was fit with monthly utilization estimated to evaluate changes after the publication of the CONSORT for Abstracts guidelines, as follows:

$$Y = \beta_0 + \beta_1 \text{Time}_1 + \beta_2 \text{Intervention} + \beta_3 \text{Time}_2 + \varepsilon_t \qquad (1)$$ where:

- Y is the mean number of items reported per abstract in month t,
- β_0 estimates the baseline level of the outcome, mean number of items reported per abstract at first time (January 2006),
- β_1 estimates the change in the mean number of items reported that occurs with each month before the introduction of the CONSORT for Abstracts guidelines (months 1 (January 2006) through 25 (January 2008)), i.e. change over time before intervention was implemented
- Time_1 is a continuous variable indicating the number of months prior to and after the introduction of the CONSORT for Abstracts guidelines (months 1 (January 2006) to 25 (January 2008) and months 29 (May 2008) to 48 (December 2009))
- β_2 estimates the change in the mean monthly number of items reported per abstract (level change) immediately after the introduction of the CONSORT for Abstracts guidelines. Because 3 months of data were excluded (transition period), immediate change reflect increases or decreases occurring from month 25 (January 2008) to month 29 (May 2008). A significant change in level constitutes an intervention effect.
- Intervention is a dummy variable (before the introduction of the CONSORT for Abstracts guidelines=0, after introduction=1)
- β_3 estimates the monthly change in the mean number of items reported per abstract (trend change) that occurs after the introduction of the CONSORT for Abstracts guidelines (month 29 (May 2008) to month 48 (December 2009, compared to the trend before the introduction (months 1 (January 2006) through 25 (January 2008)). A significant change in trend change represents a long term intervention effect.
- Time_2 is a continuous variable indicating the number of months prior that have passed since the introduction of the CONSORT for Abstracts guidelines (month 29 (May 2008) to month 48 (December 2009)). This is code as 0 for all time periods prior to the introduction of the CONSORT for Abstracts guidelines and is code as a continuous variable starting at 1 for all times after the introduction of the CONSORT for Abstracts guidelines.
- Error term ε_t at time t represents the random variability not explained by the model.

Expressing intervention effects

Let *b denote the estimate* of β. To estimate the effect measured before the implementation of the CONSORT for Abstract guidelines, we can express expected results from equation (1) at month 25:

$$Y_{\text{estimated at month 25 without intervention}} = b_0 + b_1 \times 25 \qquad (2)$$

To estimate the effect of implementation of the CONSORT for Abstract guilelines, we can express expected results from equation (1) at month 48, which is 20 month after the beginning of the intervention:

$$Y_{\text{estimated at month 48 with intervention}} = b_0 + b_1 \times 48 + b_2 \times 1 + b_3 \times 20 \qquad (3)$$

From (1), we also can express expected results at month 48 without intervention:

$$Y_{\text{estimated at month 48 without intervention}} = b_0 + b_1 \times 48 \qquad (4)$$

The difference between equation (3) and (4),

$$Y_{\text{estimated at month 48 with intervention}} - Y_{\text{estimated at month 48 without intervention}} = b_2 \times 1 + b_3 \times 20$$

is the estimate of the absolute intervention effect.

The relative change in outcome associated with implementation of the CONSORT for Abstract guidelines is

$(Y_{\text{estimated at month 48 with intervention}} - Y_{\text{estimated at month 48 without intervention}}) / Y_{\text{estimated at month 48 without intervention}}$, which can be expressed as percentage change by multiplying by 100.

Segmented regression with two groups: model for comparing journals having an active policy and those with inactive policy

A dummy variable for group and associated interaction terms were incorporated in the previous model (1):

$$Y = \beta_0 + \beta_1 \text{Time}_1 + \beta_2 \text{Intervention} + \beta_3 \text{Time}_2 + \beta_4 \text{Group} + \beta_5 \text{Group} \times \text{Time}_1 + \beta_6 \text{Group} \times \text{Intervention} + \beta_7 \text{Group} \times \text{Time}_2 + \varepsilon_t \quad (5)$$

where

- β_4 estimates the difference between the groups in baseline level
- Group is a dummy variable (0=abstract extracted from a journal with inactive editorial policy (BMJ, JAMA, New England Journal of Medicine), 1= abstract extracted from a journal with active editorial policy(Annals of Internal Medicine, Lancet))
- β_5 estimates the difference between the groups in prior trend
- Group × Time_1 is the interaction term between Group and Time_1
- β_6 estimates the difference between the groups in change level (are groups different on the amount of change immediately after the introduction of the CONSORT for Abstracts guidelines?)
- Group × Intervention is the interaction term between Group and Intervention
- β_7 estimates the difference between the groups in change in trend (are groups different on change in slope from pre intervention to post intervention?)
- Group × Time_2 is the interaction term between Group and Time_2