Extending the *IARC Monographs* The Conduct of Meta-, Pooled, and Quantitative Exposure–Response Analyses in Recent Volumes

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**BACKGROUND**

Meta-, pooled, and quantitative exposure–response analyses are recognized as valuable tools in the identification of carcinogenic hazards by providing information to support:

- Causal inference
- Risk estimation
- Calculations of attributable risk and cancer burden.

Using meta-, and pooled, and quantitative exposure–response analyses has previously been identified as a priority for the *IARC Monographs* (2014 review recommendations).

**Aim:** Describe and characterize meta-, pooled, and quantitative exposure–response analyses undertaken in recent Monographs

**Key considerations include the availability and quality of data; pre-existing meta-analysis; the extent of the exposure; and the magnitude of the risk.**

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**RESULTS: 14 Monographs since 2014**

- The Working Group undertook meta-, pooled, and/or quantitative exposure–response analyses in 6 Monographs

  **Reasons for undertaking analysis:**
  - Updating the evidence to improve precision
  - Refining the evidence with improvements to exposure or outcome measurement
  - Extending the evidence with dose–response or meta-regression analysis

- Other examples: Volume 112 – Glyphosate and NHL; Volume 118 – Welding and lung cancer; Volume 121 – Styrene and NHL

- The Working Group did not undertake meta-, pooled, or quantitative exposure–response analyses in 8 Monographs

  **Reasons for not undertaking analysis:**
  - High-quality meta-analysis already available
  - No or few human cancer studies available
  - Exposure is rare
  - Level of evidence did not warrant it

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**DISCUSSION**

- The *Monograph* Working Groups seek opportunities to undertake meta-, pooled, and quantitative exposure–response analysis where it is warranted.
- Key considerations include the availability and quality of data; pre-existing meta-analysis; the extent of the exposure; and the magnitude of the risk.
- Including meta-, pooled, and quantitative exposure–response analysis in the *Monographs* can improve public health messages and cancer burden estimates.
- A more clearly defined and systematic approach to Working Groups documenting their reasoning on whether (or not) to conduct meta-, pooled, and quantitative exposure–response analysis could be considered.