# Evaluating disease management programmes

## Learning from diverse approaches across Europe


### Key messages

**The DISMEVAL consortium (Developing and validating disease management evaluation methods for European healthcare systems, a consortium of ten partners in seven countries led by RAND Europe), examined approaches to chronic disease management in 13 countries across Europe and tested the methods being used to evaluate these in six countries.**

**The DISMEVAL project:**

- **demonstrated that the nature and scope of models for the management of chronic disease varied across Europe, as did the methods employed to evaluate them;**
- **tested a range of evaluation methods that could be used for interventions that are not administered in a randomised controlled trial;**
- **found that rigorous evaluation is still possible where baseline or predefined control groups are not available; and**
- **showed that the use of randomisation, or other methods of control, is necessary to assess accurately the impact of interventions.**


Complex interventions to manage chronic conditions are under scrutiny across Europe for their clinical and cost-effectiveness. The methods for evaluating these interventions differ, however, and also vary in their ability to add robust data to the evidence base that can usefully inform decision making.

The aim of the DISMEVAL project was to help advance the methodological base and the use of metrics for the evaluation of disease management, and to provide evidence-based recommendations on approaches that may be most useful in a given context. The project further sought to review current approaches to the implementation and evaluation of chronic disease management in Europe and to identify examples of best practice and lessons learned.

### Mapping: chronic disease management in Europe

The project reviewed the policy context for, and approaches to, chronic disease management in 13 European countries, using a structured data collection instrument that organised chronic disease management around four components: active patient involvement, service design, decision support and clinical information systems. Further data were collected on the policy context, finance, decision making, institutional framework and key relationships, in order to highlight strengths and weaknesses of each system.

This mapping identified variation across Europe in the scope and nature of approaches to disease management; as well as showing a similar diversity in the methods of evaluating those approaches. It found that fragmentation between ambulatory/primary care and hospital/secondary care, as well as between the health and social care sectors, remain key concerns in most healthcare systems. Countries have sought to create a regulatory and policy framework to address chronic disease during recent years. However, interviews with key informants highlighted continuing challenges to arriving at a more strategic response to chronic disease, including: a failure to integrate risk minimisation and disease prevention with other components along the care continuum; misalignment of financial incentives; and a disjoint between intent at national level to enhance coordination and integration and the ability at regional or local level to translate these ambitions into practice.

### Methods: testing and validation of methods for evaluating chronic disease management

The DISMEVAL consortium tested and validated evaluation methods in six countries using data from existing, population-wide interventions, as shown in Table 1. All interventions except the Austrian programme were implemented in a non-experimental setting.

The DISMEVAL project started from the premise that rigorous evaluation requires some form of comparison between individuals who receive the intervention

| | |
|---|---|
| Austria | Disease management programmes for diabetes type 2 |
| Germany | Disease management programmes for diabetes type 2 |
| Netherlands | Diabetes care groups |
| France | Provider networks for diabetes and for cancer |
| Denmark | Interdisciplinary and intersectoral rehabilitation programmes for people with<br>• chronic obstructive pulmonary disease<br>• diabetes |
| Spain | Nurse-led intervention targeting a working-age population at risk of cardiovascular disease |

**Table 1. Country-based interventions evaluated by DISMEVAL**




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and those who do not, in order to establish whether a given disease management intervention yields a 'true' effect, that is to say whether the effects observed can be attributed to the intervention. Figure 1 illustrates the relationship between scientific rigour and practicability across different methods of attributing observed effects to an intervention. However, identifying a suitable comparator in practice remains a challenge.

The project's key findings for informing future evaluation methods are illustrated here with selected examples.

### *'Before–after' designs do not provide robust estimates of intervention effect*

Evaluation of the diabetes disease management programme in Austria using an uncontrolled before–after design found that this method of evaluation distorted the estimate of treatment effect on clinically relevant endpoints. For example, the 'number needed to treat' (NNT) to avoid one case of myocardial infarction or one diabetes complication over a period of 10 years, was underestimated, reducing the apparent NNT to one-third of the randomised controlled comparison.

Similar observations were made in the evaluation of diabetes provider networks in France, which showed that using a simple before–after evaluation design without control overestimated improvements in glycaemic control (HbA1c level) and relative body weight, and underestimated deterioration in renal function, in diabetic patients. In addition, it found evidence of selection bias when examining the characteristics of patients enrolled with the provider network. Using a national reference population for comparison, the patients in the network were found to be younger, with a more recent diabetes diagnosis, and showing evidence of worse glycaemic control.

### *The choice of approaches to constructing control groups in non-experimental designs impacts on observed intervention effect*

Routinely collected data were used to develop 'quasi-experiments' by defining a control group or matched controls for patients receiving the intervention. However, different methods can be chosen to define controls or baseline data, and this choice can influence the size or direction of the findings. For example:

- Different approaches used to identify treatment–control matches in a non-experimental intersectoral intervention for patients with chronic obstructive pulmonary disease in Denmark generated different estimates for the effect of the treatment.

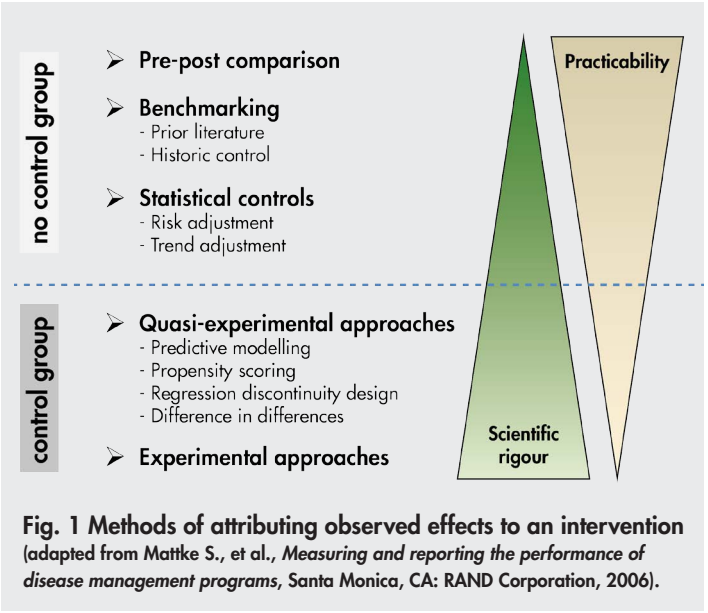


**Fig. 1 Methods of attributing observed effects to an intervention**
**(adapted from Mattke S., et al., *Measuring and reporting the performance of disease management programs*, Santa Monica, CA: RAND Corporation, 2006).**

- Different methods to adjust for baseline differences in a non-experimental setting using routine data to assess the intervention effect of a diabetes disease management programme in Germany resulted in similar effect measures.

### *Advanced evaluation designs can help understand 'what works for whom'*

Where a controlled design is not feasible, it is still possible to estimate the differential impacts of an intervention on outcomes. Examining Dutch diabetes care groups, the researchers applied meta-analysis and metaregression methods. This showed that while the analysis of all treated patients found only modest impacts overall from the intervention, an analysis of sub-groups within the treated population revealed disease management to be considerably more effective for patients with poor baseline clinical values. This suggests that the intervention should be tailored to take account of patient characteristics, and include a component of support for self-management.

The DISMEVAL project has shown that the impact of chronic disease management interventions will depend, to a considerable extent, on the specific features of the healthcare setting within which the interventions are introduced, and this observation seems to hold both within and between care systems. However, the learning from each setting can be applied to improve disease management evaluation in other health systems and countries. ■

This REsource Note summarises research reported in the following publications:


- Nolte E, Hinrichs S, eds., *DISMEVAL. Developing and validating disease management evaluation methods for European healthcare systems*. Final report. Santa Monica, CA: RAND Corporation and DISMEVAL Consortium, 2012. (TR-1226-EC) www.rand.org/pubs/technical_reports/TR1226
- Nolte E et al., *Evaluating chronic disease management: Recommendations for funders and users*. Santa Monica, CA: RAND Corporation and DISMEVAL Consortium, 2012. (TR-1213) www.rand.org/pubs/technical_reports/TR1213



The consortium includes: RAND Europe, London School of Hygiene & Tropical Medicine, Paracelsus Medizinische Privatuniversität Salzburg, Københavns Universitet, Johann Wolfgang Goethe Universität Frankfurt/Main, Université Paris XII – Val de Marne, Universiteit Maastricht, Instituto de Salud Carlos III, Centre Anticancéreux Léon Bérard, AQUA - Institut für angewandte Qualitätsförderung und Forschung. DISMEVAL was funded by the European Commission under the Seventh Framework Programme.





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