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# Vaccine

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)



## Vaccine hesitancy: Definition, scope and determinants

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### ARTICLE INFO

Article history:  
Available online xxx

Keywords:  
Vaccination hesitancy  
Vaccine hesitancy  
Hesitancy determinants  
Hesitancy determinants matrix  
WHO

### ABSTRACT

The SAGE Working Group on Vaccine Hesitancy concluded that *vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence.* The Working Group retained the term 'vaccine' rather than 'vaccination' hesitancy, although the latter more correctly implies the broader range of immunization concerns, as vaccine hesitancy is the more commonly used term. While high levels of hesitancy lead to low vaccine demand, low levels of hesitancy do not necessarily mean high vaccine demand. The Vaccine Hesitancy Determinants Matrix displays the factors influencing the behavioral decision to accept, delay or reject some or all vaccines under three categories: contextual, individual and group, and vaccine/vaccination-specific influences.

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### 1. Background

The first tasks of the SAGE Working Group on Vaccine Hesitancy (WG) [1] established in 2012, was to propose a definition of hesitancy and its scope and to develop a model to categorize factors that influence the behavioral decision to accept a vaccine. The WG accomplished these tasks through discussion of the use of the term and similar terms in the scientific literature, review of models of vaccine hesitancy, review of (a) a commissioned systematic review of determinants of vaccine hesitancy [2], (b) field reports and personal observations from the field by different organizations on hesitancy factors, and (c) a commissioned immunization managers' survey of vaccine hesitancy [3], as well as personal observations and experiences of WG members.

### 2. Terminology

As review of the literature did not reveal an established definition, the WG, in its early meetings, discussed at some length whether 'hesitancy' was the most appropriate word to describe the problem. Concerns were raised that hesitancy has a negative connotation. The most commonly offered alternative in the literature was confidence, a more positive word. While confidence covers a range of issues such as trust in vaccines including concerns about

vaccine safety, and trust in health-care workers delivering the vaccine and in those making the decisions to approval of vaccines for a population, confidence is still narrow in scope covering only one category of factors that affect vaccination acceptance decisions (see Matrix Determinants below). Terms such as vaccine acceptance and uptake were also excluded as neither captured the concept breadth i.e. one might accept a vaccine but delay in accepting it i.e. not accepted according to the vaccine schedule. Hence the WG accepted the term hesitancy and then explored potential factors needed in its definition.

During discussions when the WG presented its report to SAGE in October 2014, the concept of vaccine hesitancy versus vaccination hesitancy was also raised. The former implies that the core issue is vaccine related while the latter covers a much wider range of factors such as immunization services, time and place, fear of needles, lack of concern about vaccine preventable diseases, etc. The WG nevertheless chose to adopt the term vaccine hesitancy but defining it in the broader sense (see Definition), noting that SAGE had used it in the terms of reference for the WG, and that this term has become the one more widely accepted in practice.

### 3. Scope

While acceptance of vaccination is the norm in the majority of populations globally, a smaller number refuse some vaccines but agree to others and some delay vaccination or accept vaccination but are unsure in doing so. Hesitancy is thus set on a continuum between those that accept all vaccines with no doubts, to complete refusal with no doubts, with vaccine hesitant individuals the

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heterogeneous group between these two extremes (Fig. 1). While recognizing that hesitant individuals encompass a wide range of people who differ from the very small percentage who refuse all vaccinations and have no doubts about doing this [4,5], the WG concluded that defining vaccine hesitancy on the continuum was not sufficient as it neither defined the scope nor implied the range of factors that influence hesitancy.

In further elucidating the scope, the WG emphasized that hesitancy is a behavioral phenomenon which is vaccine and context specific and measured against an expectation of reaching a specific vaccination coverage goal, given the immunization services available. Vaccine hesitancy may be present in situations where vaccination uptake is low because of system failures, e.g. stock-outs, limited availability of vaccination services (time, place, etc.), curtailment of vaccine services in the presence of conflict or natural disaster, but in these situations hesitancy is not the main explanation for the presence of unvaccinated or under-vaccinated members of the population. Assessing whether hesitancy is present in a population and differentiating hesitancy from other reasons why children/adults are unvaccinated or under-vaccinated is essential for the selection of interventions needed to address low vaccine uptake.

#### 4. Vaccine hesitancy versus vaccine demand

The Working Group examined the relationship between vaccine hesitancy and vaccine demand [6]. In the Global Vaccine Action Plan, approved by the World Health Assembly in May 2012, Strategic Objective 2 states that “individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility” [p. 38].

As illustrated in Fig. 1, vaccine hesitancy occurs on the continuum between high vaccine demand and complete vaccine refusal, i.e. no demand for available and offered vaccines. However, demand and hesitancy are not completely congruent. An individual or community may fully accept vaccination without hesitancy but may not demand vaccination or a specific vaccine. The following examples illustrate demand aspects that go beyond hesitancy. In Uttar Pradesh, India, the community demanded, through the courts, public access to Japanese encephalitis vaccine to curb annual disease outbreaks associated with high morbidity and mortality among their children [7]. In Calgary, Canada, in-school access to Human Papilloma Virus vaccine was prohibited in Catholic schools in 2008, but citizens’ demand successfully overturned this ban in 2013 and

supported in-school access to HPV vaccination as had previously been available only in non-Catholic public schools [8].

Because hesitancy undermines demand, to achieve the vaccine demand goal, as defined in the Global Vaccine Action Plan, countries will need to take action to counteract hesitancy. When rates of hesitancy are high, levels of demand are low, but low rates of hesitancy do not necessarily mean that demand will be high. To achieve high individual and community vaccine demand, context, community and vaccine specific strategies beyond those aimed at addressing hesitancy need to be developed.

#### 5. Vaccine hesitancy models

Acceptance of vaccination is an outcome behavior resulting from a complex decision-making process that can be potentially influenced by a wide range of factors. In developing the definition, the WG in 2012 reviewed a number of conceptual models for grouping vaccine hesitancy determinants [2,9–11]. In the review, model complexity, global applicability, breadth of factors considered and potential usefulness in informing the development of vaccine hesitancy indicators and survey questions for use at the global and country levels were all considered. The WG also assessed whether the model could facilitate understanding of the concept of vaccine hesitancy for those unfamiliar with the term.

Review of these models confirmed the complexity of vaccine hesitancy and its determinants. The “3 Cs” model, first proposed to the WHO EURO Vaccine Communications Working Group in 2011 [9], highlights three categories; complacency, convenience and confidence (Fig. 2). As this model was viewed as being the most readily understandable, the concepts were incorporated in the definition.

In the “3 Cs” model, *confidence* is defined as trust in (i) the effectiveness and safety of vaccines; (ii) the system that delivers them, including the reliability and competence of the health services and health professionals and (iii) the motivations of policy-makers who decide on the needed vaccines.

Vaccination *complacency* exists where perceived risks of vaccine-preventable diseases are low and vaccination is not deemed a necessary preventive action. Complacency about a particular vaccine or about vaccination in general is influenced by many factors, including other life/health responsibilities that may

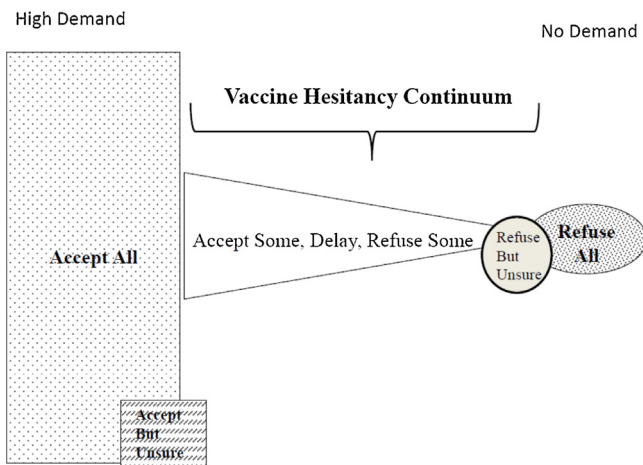


Fig. 1. The continuum of vaccine hesitancy between full acceptance and outright refusal of all vaccines.

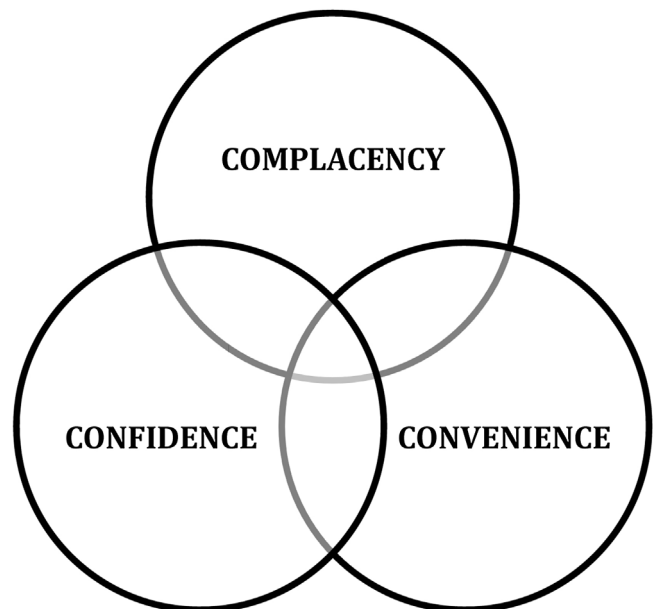


Fig. 2. “Three Cs” model of vaccine hesitancy.

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