



Indicators to assess National Immunization Technical Advisory Groups (NITAGs)[☆]

Julia Blau^{a,*}, Nahad Sadr-Azodi^b, Marine Clementz^a, Nihal Abeyasinghe^c, Niyazi Cakmak^d, Philippe Duclos^e, Cara Janusz^f, Barbara Jauregui^f, Richard Mihigo^g, Liudmila Mosina^d, Yoshihiro Takashima^h, Kamel Senouci^a

^a Agence de Médecine Préventive (AMP), 164 rue de Vaugirard, Paris 75015, France

^b World Health Organization, Regional Office for the Eastern Mediterranean, Abdul Razzak Al-Sanhouri St, PO Box 7608 Nasr City, Cairo 11371, Egypt

^c World Health Organization, Regional Office for South East Asia, World Health House, Mahatma Gandhi Marg, New Delhi, 110002, India

^d World Health Organization, Regional Office for Europe, Schersfigvej 8, 2100 Copenhagen, Denmark

^e World Health Organization, Headquarters, Avenue Appia 20, 1211 Geneva, Switzerland

^f Pan American Health Organization/World Health Organization, 525 23 Street NW, Washington DC 20037, USA

^g World Health Organization, Regional Office for Africa, P.O Box 6, Cité de Djoué, Brazzaville, Congo

^h World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, Manila 1000, Philippines

ARTICLE INFO

Article history:

Received 20 September 2012

Received in revised form 9 January 2013

Accepted 25 January 2013

Available online 8 February 2013

Keywords:

Advisory committee

Evidence-based medicine

Decision making

Health policy

Immunization

Indicators

National Immunization Technical Advisory

Group (NITAG)

Monitoring and evaluation

ABSTRACT

A National Immunization Technical Advisory Group (NITAG) is an expert advisory committee that provides evidence-based recommendations to the Ministry of Health (MoH) to guide immunization programs and policies. The World Health Organization (WHO), the Initiative for Supporting National Independent Immunization and Vaccine Advisory Committees (SIVAC) at Agence de Médecine Préventive (AMP) and the US Centers for Disease Control and Prevention (US CDC) engaged NITAG stakeholders and technical partners in the development of indicators to assess the effectiveness of NITAGs. A list of 17 process, output and outcome indicators was developed and tested in 14 countries to determine whether they were understandable, feasible to collect, and useful for the countries. Based on the findings, a revised version of the indicators is proposed for self-assessment in the countries, as well as for global monitoring of the NITAGs.

© 2013 The World Health Organization. Published by Elsevier Ltd. All rights reserved.

1. Background

As an independent expert advisory committee, a National Immunization Technical Advisory Group (NITAG) provides evidence-based recommendations to the ministry of health (MoH), policy makers and program managers to guide policies and formulate strategies. NITAGs aim to support and empower the government and national authorities evidence-based decision making. As such, they serve to promote the adoption of policies based on national priorities, help resist pressure from interest groups, reinforce the credibility of national vaccine and immunization strategies, and enhance the ability to secure government or donor funding.

An important question, however, is how would we know if NITAGs are meeting their intended purpose? Most stakeholders, including policymakers, managers, providers and consumers of vaccines and immunization services, are indeed interested to know if and how establishing an independent body of experts would

Abbreviations: AMP, Agence de Médecine Préventive; EPI, Expanded Program on Immunization; JRF, Joint Reporting Form; NIP, National Immunization Program; MoH, Ministry of Health; NITAG, National Immunization Technical Advisory Group; SIVAC, Supporting Independent Vaccine Advisory Committees; SOPs, Standard Operating Procedures; ToRs, Terms of Reference; US CDC, United States Centers for Disease Control and Prevention; WHO, World Health Organization.

[☆] **Disclaimer:** Several of the authors are staff member of the World Health Organization. The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the decisions, policy or views of the World Health Organization.

* Corresponding author. Tel.: +33 1 53 86 89 28; fax: +33 1 53 86 89 39.

E-mail addresses: jblau@aamp.org (J. Blau), nfs8@cdc.gov (N. Sadr-Azodi), marineclementz@gmail.com (M. Clementz), abeyasinghen@searo.who.int (N. Abeyasinghe), nca@euro.who.int (N. Cakmak), duclosp@who.int (P. Duclos), januszc@paho.org (C. Janusz), jauregub@paho.org (B. Jauregui), mihigor@afro.who.int (R. Mihigo), mol@euro.who.int (L. Mosina), takashimay@wpro.who.int (Y. Takashima), senouci@gmail.com (K. Senouci).

make any difference in improving immunization services and the health of the population.

This paper is intended to reflect on this complex issue and suggest a self-assessment tool. This tool is not designed to provide all the evaluative answers as priorities, interests and capacities vary from one country to another. It does, however, suggest a list of indicators for various stakeholders to consider as they assess the contributions of NITAGs in their respective settings.

The proposed tool was developed with an understanding and recognition of the diversity of various perspectives and the different level of development of NITAGs (long-time ago established ones versus more recently ones). The users of this tool, at any level, will decide which of the proposed indicators best fits their needs and priorities. For example, global experts and leaders may be focusing on the industry's role in the overall decision making process, whereas, national authorities and their constituents may want to know if introduction of new vaccines are cost-effective in the long run. Moreover, managers and providers may be interested in the efficacy of a particular vaccine in a certain population, whereas consumers and the general population may be concerned about the risks or adverse events of vaccines.

Accordingly, the World Health Organization (WHO), the Agence de Médecine Préventive (AMP) through the Initiative for Supporting National Independent Immunization and Vaccine Advisory Committees (SIVAC [1]), in collaboration with the US Centers for Disease Control and Prevention (CDC) and NITAG members from 14 countries, developed a set of output and outcome indicators based on the stakeholders' perspectives methodology [2]. As mentioned, the primary objective of the tool is to provide the countries with an opportunity to evaluate their NITAGs by incorporating various perspectives and interests. It can also serve as a tool for WHO, SIVAC, technical partners and the immunization community to identify gaps and opportunities related to NITAG strengthening [3].

This article describes the process of developing NITAG indicators, presents the pilot testing results, and concludes with the final list of 17 indicators proposed for self-assessment in the countries.

2. Methods

2.1. Development of the NITAG indicators

In 2009, the WHO, AMP/SIVAC and the CDC developed 6 process indicators that were included in the WHO/UNICEF Joint Reporting Form (JRF) [4,5]. As a monitoring system adopted by the WHO and UNICEF in 1998, the JRF collects self reported national-level data on selected vaccine-preventable diseases cases, immunization coverage, recommended immunization schedules, vaccine supply and other information on the structure, and policies and performance of national immunization systems.

NITAG process indicators included in the JRF included existence of: formal written terms of reference; legislative or administrative basis establishing the committee; core membership with at least 5 main expertise areas represented among members; committee meeting at least once a year; agenda and background materials distributed ahead of meetings; and declaration of interests by committee members. In developing the process indicators, WHO, AMP and partners aimed to create a mechanism to assess the basic functionality of NITAGs. While these process indicators are advantageous because of their simplicity and applicability for all regions and allow for monitoring of progress at regional and global level, they do not capture information to assess the effectiveness and impact of NITAGs.

In 2010, WHO and AMP together with other partners and several countries decided to apply a different methodology, the stakeholders' perspectives methodology, to develop a set of output and

outcome indicators [2]. This approach recognizes that there are a number of individuals and organizations with possibly different expectations for how a NITAG should perform and what it should deliver. Accordingly, we need to look at NITAG effectiveness through multiple lenses, and talk about it in terms that are relevant to the various interested parties.

As an example of how this methodology is applied, if one considers what the value of vaccinating a child is, the answer will depend on who we ask—a parent, in addition to having a peace of mind that her child doesn't get sick and suffer, may also express relief for not having to take time off from work to attend to a sick child; a provider may feel good about offering a safe product to the family, establishing long term relations and providing additional services in the future; a manager or scientist may be focused on protecting the vulnerable populations and preventing outbreaks through building herd immunity; a vaccine producer may be concerned about its reputation and a return on its investment; and a national authority may be driven by savings through prevention of hospital visits, etc. In other words, every individual and organization has a particular interest in the aftermath of a vaccinated child.

The stakeholders' perspectives approach focuses on 5 categories of stakeholders: authorities, managers, implementers, recipients and beneficiaries. Their interests and perspectives typically reflect a value chain of inputs, activities and outputs/outcomes. Inputs are the funding, staffing, directives and constraints that are provided to a NITAG. Activities or the various work efforts undertaken by a NITAG may include: holding meetings, collecting data related to local and regional needs and responding to questions from decision-makers. Activities produce outputs, which in turn, contribute to outcomes. In terms of a NITAG, the main output is considered to be the "evidence-based recommendations" given directly to the recipients, i.e. ministry of health and other decision-makers. After receiving the evidence-based recommendations, the ministry of health may accept and implement them, which in turn, should contribute to the intended improvements in population health.

For example, if a NITAG was to recommend the introduction of a new vaccine, a policymaker or authority may decide not to introduce it because of concerns about the funding implications (i.e. input) of this decision, whereas a parent may worry about the vaccine safety (i.e. intermediate outcome). So, how do we decide on the effectiveness of a NITAG when each stakeholder may have a different interest? The stakeholders' perspectives methodology adeptly allows for these varying interests to be incorporated and analyzed so that the agreed-upon indicators can be meaningful and useful to all involved parties.

After brainstorming with a number of current and former NITAG members, a total of 31 indicators were considered. From the 31 indicators originally considered, 17 were selected based on the following inclusion criteria: understandability, ease of collection and perceived usefulness. The inclusion criteria are described in the article. The excluded indicators are listed in Appendix 1.

The 17 selected indicators are classified in 3 categories and include 10 *process or activity indicators* to monitor the functionality of a NITAG, based on global recommendations and best practices; 3 *output indicators* to assess the quality and relevance of evidence-based recommendations; and 4 *outcome indicators* to evaluate the impact of technical recommendations on government policies and strategies.

2.2. Piloting of the NITAG indicators

In 2011, a protocol and questionnaire were developed for piloting the 17 indicators in the countries. The indicators were tested in 14 countries (Table 1), which were selected to ensure representation of a broad range of socio-economic development, as well as

Table 1

Pilot testing of National Immunization Technical Advisory Groups (NITAG) indicators in selected countries, by World Health Organization (WHO) Region.

Region according to the WHO classification	Country
Africa	South-Africa
Eastern Mediterranean	Iran, Oman, Sudan
Europe	Belarus, France, United Kingdom
Americas	Mexico
South-East Asia	Indonesia, Sri Lanka, Thailand
Western Pacific	Australia, Mongolia, South Korea

countries with long- and newly established NITAGs [6–15]. The aim of the piloting was to help refine the set of indicators and their definitions. Specifically its purpose was to determine whether or not the proposed indicators were understandable (i.e. clear and relevant), feasible to collect (i.e. human resource and funding cost), and useful (i.e. applied to action) primarily for the NITAG members, immunization managers, internal groups, such as scientific societies or associations and external partners, such as WHO and SIVAC.

The pilot testing was coordinated by regional focal points. The focal points were in charge of contacting the interviewees identified in each country to participate in the pilot, coordinating the work, and translating the questionnaire from English to French, Russian, and Spanish. The interviewees were selected from among the most knowledgeable persons serving the selected country's NITAG, including NITAG Chairs, members Immunization managers and MoH staff. The protocol and questionnaire were distributed to each interviewee. Focal points explained the methodology to the interviewees via teleconferencing, and assisted with the data collection. During the pilot testing, the interviewees were encouraged

to provide additional relevant information and input on the ease of data collection.

3. Results: a proposed list of NITAG indicators for the countries

The pilot results indicated that the indicators were clear and deemed relevant by the interviewees and required minor wording revisions.

An example of a revision included the question “How many recommendations issued by the NITAG took into account the availability of the vaccine?” In several countries, NITAGs take vaccine availability into account in their decision-making processes, but in others, vaccine availability is only discussed after the recommendation is issued by the NITAG. Therefore, to avoid misunderstandings, the definition and instructions for this question were revised.

The pilot also highlighted important issues in the feasibility of collecting the data, such as years of collection. In particular, the number of years was shortened to only 1 year (instead of 3), in order to avoid recall bias.

Finally, the pilot highlighted the usefulness of the indicators for the countries and their interests in monitoring their activities. Countries expressed a need to show the impact of their work in shaping immunization policies. As a consequence of the pilot, several countries (including long time ago established NITAG) decided to review their NITAGs' terms of reference and standard operating procedures. This was the best indicator of the usefulness of these indicators.

In light of the findings, a revised version of the list of 17 indicators is proposed for self-assessment in the countries (Table 2).

Table 2

Proposed list of National Immunization Technical Advisory Groups (NITAG) indicators for self assessment in the countries.

Process indicators	
Legislative/administrative basis*	Is there a legislative or administrative basis for the NITAG?
Advisory role only	Is the NITAG role technical advisory only?
Terms of reference*	Are there formal terms of reference for the NITAG?
Membership*	Is there a clearly defined selection process to become a core member and the Chairperson of the NITAG? Are the main areas of expertise recommended by WHO represented by core members? Are there non-core members? Are there rules for the rotation process for core members?
NITAG functioning SOPs	Are there clearly defined NITAG functioning SOPs?
Independent chairperson	Is the NITAG Chairperson independent from the MoH and the immunization program?
Number of meetings*	How many meetings were held in each of the past 3 years?
Agenda and background documents distribution*	Were the agenda and background documents distributed and received at least 1 week in advance for each of the past 3 NITAG meetings?
Declaration of interests*	Is there a conflict of interest policy in place? Were all core members asked to declare their interests at the beginning of each of the past 3 years? Were all core members asked to declare their interests at the beginning of the past 3 NITAG meetings?
Official requests for recommendations received and addressed	How many official requests for recommendations has the NITAG received from the MoH and/or the immunization program? How many of them has the NITAG addressed?
Output indicators	
Evidence-based methodology for recommendations	How many recommendations were issued by the NITAG? How many of these recommendations made reference to peer-reviewed published material?
Country-specific criteria for recommendation	How many recommendations issued by the NITAG were supported by local evidence or contextual information?
Vaccine availability and delivery capacity criteria for recommendations	How many recommendations issued by the NITAG took into account the vaccine availability and delivery capacity at national level?
Outcome indicators	
MoH decisions made in consultation with the NITAG	How many MoH immunization-related decisions were made in consultation with the NITAG?
Recommendations accepted by the MoH	How many recommendations issued by the NITAG were accepted by the MoH? How many recommendations issued by the NITAG were not accepted by the MoH?
Recommendations which were not adopted by scientific or professional organizations	How many recommendations issued by the NITAG were not adopted by scientific and professional organizations?
Recommendations implemented in the country	How many recommendations were implemented in the country? How many recommendations were not implemented in the country?

* These 6 indicators are also included in the JRF.

4. Discussion

The primary objective of this exercise was to develop a set of indicators for countries to consider in assessing their NITAGs' performance. Countries may review the indicators annually to evaluate their progress toward achieving and institutionalizing more standardized and evidence-based processes for immunization policymaking. The findings suggest that the proposed list of NITAG indicators will be well-received and serve as a useful self-assessment tool for countries.

There are 3 main limitations to this study. The first limitation of this methodology is that the indicators reflect only the work of the NITAGs, while the decision making process in the countries is often more complex and involves many actors. Although the outcome indicators are an attempt to analyze the NITAGs' impact, it will be difficult to assess the reasons for which a recommendation is accepted and implemented, or not, by the ministry of health. Thus, the outcome indicators can be complemented by semi-structured interviews with ministry of health staff to capture the context and the reasons behind the decisions.

The second limitation is the duration of this study as it only reflected data from the previous year. The pilot showed that it was difficult to get information older than 1 year as there was a high turnover in the NITAGs' executive secretaries (function usually provided by the MoH). To address this limitation, the countries are recommended to do this self-assessment on an annual basis, at the same time period every year, in order to be able to monitor the evolution and progress of the NITAG.

The third limitation is linked to the methodology of self-assessment, which can be subjective. To address this limitation, one possible solution would have been to recommend an external review rather than a self-assessment exercise. However, it was not feasible due to lack of resources in most countries and the growing number of countries establishing a NITAG.

As the aim of the pilot testing was to evaluate the indicators in order to refine them and come up with a useful tool for the countries, this article does not include the results of each question per country. However, some summary results can be interesting for the reader to know as they illustrate the need for the countries to evaluate their NITAGs. For example it can be interesting to note that only 2 of the process indicators as expressed in the JFR (in 2010) were met by all countries. Those 2 indicators were the presence of terms of reference and the representativeness of a diverse range of expertise in the membership of the NITAG. Another result of interest is that in 77% of the cases, NITAG recommendations were accepted by the MoH and in 71% of the cases NITAG recommendations were implemented by the countries (in 2010). These results have to be taken with caution and it should not be assume that they can be extrapolated to represent the experience of all countries as they come from a pilot test with indicators that were not yet completely finalized and validated, and that were tested on a sample of countries only which doesn't represent the global reality of NITAGs. It will be more interesting to know the detailed country results when the tool will be available and used by all countries. Countries will be supported and encouraged to publish their results as they become available, and upon a couple years of use and feed-back the set of indicators will be further refined.

5. Conclusion

The WHO, AMP/SIVAC and US-CDC propose the use of 17 indicators as a tool for self-assessment of NITAGs. These indicators can also be used to monitor NITAG developments globally and to guide support to countries in identifying and promoting promising practices to improve NITAGs' effectiveness. This proposed list of

indicators can be considered by all stakeholders, and will be most useful to countries which decide to assess their NITAGs and need a specific tool to assist them in this process.

The proposed list of indicators will be made available to the countries with a guide defining each indicator, examples and details on how to collect and analyze them. This package named "instructions for assessment of NITAGs" will be accessible for free on the NITAG Resource Center (www.nitag-resource.org), a collaborative platform aiming at increasing the collaboration between NITAGs and themselves and with the technical partners.

Acknowledgments

The authors would like to thank the NITAG members and experts for their time and valuable contributions in the revision of the NITAG indicators and the pilot testing exercise: Monica Johns (Australia), Elena Samoilovich and Veronika Shimanovich (Belarus), Gabriel Oselka (Brazil), Noni Macdonald (Canada), Cristina Mariño (Colombia), Daniel Floret (France), Berenice Molina (Honduras), Suresh Jadhav and Prasad Kulkarni (India), Lucky Slamet and Julitasari Sundoro (Indonesia), Mohsen Zahraei (Iran), Misael Gomez (Mexico), Narangerel Dorj (Mongolia), Salah Al Awaidy (Oman), Barry Schoub (South Africa), Heeyeon Cho and Batmunkh Nyambat (South Korea), Paba Palihawadana (Sri Lanka), Amani Mustafa (Sudan), Charung Muangchana (Thailand), Andrew Hall (UK) and Robert Steinglass (USA), Brad Gessner, Lara Gautier and Céline Hoestlandt (AMP), Kathy Cavallaro, Jacqueline Gindler and Jean Clare Smith (CDC), Bartholomew Dicky Akanmori, Thomas Cherian, Shafiqul Hossain, Mwenda Jafon, Carsten Mantel, Ezzeddine Mohsni, and Isabelle Wachsmuth (WHO). The authors would also like to thank Mary Campbell (Mary Campbell & Associates) for her support in the development of the indicators and the use of the stakeholders methodology.

Conflict of interest statement: Julia Blau, Marine Clementz, and Kamel Senouci work for the Agence de Médecine Preventive (AMP). AMP receives unrestricted grant support and research support from sanofi pasteur as well as research support from Glaxo-Smith-Kline, Pfizer, and Merck. None of the funds from vaccine manufacturers are used to support SIVAC Initiative activities, including the preparation of the current manuscript. The other authors have no conflict of interest to declare. *Funding:* The current manuscript was supported by the SIVAC Initiative (housed at AMP), which is funded entirely by a grant from the Bill & Melinda Gates Foundation.

Appendix A. Appendix 1

Potential National Immunization Technical Advisory Groups (NITAG) indicators excluded from the final list of indicators.

Process indicators	
Quorum of core members in meetings	How many meetings were held with a quorum of core members?
Minutes published	How many meetings have validated minutes published?
Outcomes evaluation	Is there formalized process to evaluate outcomes of NITAG and to feed them back into the NITAG processes and workplans?
Annual work plan	Is there an annual work plan in place?
Annual budget	Is there an annual budget to cover cost of running the NITAG?
Confidentiality agreement	How many members have confidentiality agreement on file?
Internet access	How many members and secretariat staff have access to internet and emails?
Executive secretariat staff	How many staff work for the NITAG executive secretariat?

Output indicators	
Understandability of recommendations and proper dissemination	How many recommendations were written in understandable terms and disseminated by proper channels?
Outcome indicators	
Incorporation of recommendations into continuing medical education programs	How many recommendations were incorporate into continuing medical education program?
Number of people targeted within a timeframe	How many people targeted by the recommendation can be accommodated within specified time frame?
Waiting time before reception of the vaccine	What is the waiting time before receiving the vaccine?
Incidence/prevalence decrease	What is the percentage of reduction of incidence/prevalence?
Cost per health outcomes	What are the cost per newly fully vaccinated person and cost per disease averted?

References

- [1] Senouci K, Blau J, Nyambat B, Coumba Faye P, Gautier L, Da Silva A, et al. The Supporting Independent Immunization and Vaccine Advisory Committees (SIVAC) initiative: a country-driven, multi-partner program to support evidence-based decision making. *Vaccine* 2010;28 Suppl. 1:A26–30, <http://dx.doi.org/10.1016/j.vaccine.2010.02.028>.
- [2] Torvatn H. *Logic Modeling Methods in Program Evaluation*. Frechtling J.A., Wiley, Inc., Jossey-Bass, San Francisco 2007, 160 pp. Evaluation and Program Planning 2008;31:219–21. £25.99/\$33.60, Paperback, ISBN: 978-0-7879-8196-9.
- [3] Duclos P. National Immunization Technical Advisory Groups (NITAGs): guidance for their establishment and strengthening. *Vaccine* 2010;28 Suppl. 1:A18–25, <http://dx.doi.org/10.1016/j.vaccine.2010.02.027>.
- [4] WHO | WHO/UNICEF Joint Reporting Process. s. d. Available at: http://www.who.int/immunization_monitoring/routine/joint_reporting/en/. Consulted 29 août 2011.
- [5] Duclos P, Ortynsky S, Abeysinghe N, Cakmak N, Janusz CB, Jauregui B, et al. Monitoring of progress in the establishment and strengthening of national immunization technical advisory groups. *Vaccine* 2012;30: 7147–52.
- [6] Schoub BD, Ngcobo NJ, Madhi S. The National Advisory Group on Immunization (NAGI) of the Republic of South Africa. *Vaccine* 2010;28 Suppl. 1:A31–4, <http://dx.doi.org/10.1016/j.vaccine.2010.02.029>.
- [7] Zahraei SM, Marandi A, Sadrizadeh B, Gouya MM, Rezaei P, Vazirian P, et al. Role of National Immunization Technical Advisory Group on improvement of immunization programmes in the Islamic Republic of Iran. *Vaccine* 2010;28 Suppl. 1:A35–8, <http://dx.doi.org/10.1016/j.vaccine.2010.02.030>.
- [8] Al Awaidey S. The national committee for vaccines regulation and surveillance of vaccine-preventable diseases in the Sultanate of Oman: evidence-based approach and consensus decision-making. *Vaccine* 2010;28 Suppl. 1:A39–41, <http://dx.doi.org/10.1016/j.vaccine.2010.02.031>.
- [9] Floret D, Deutsch P. The French Technical Vaccination Committee (CTV). *Vaccine* 2010;28 Suppl. 1:A42–7, <http://dx.doi.org/10.1016/j.vaccine.2010.02.032>.
- [10] Hall AJ. The United Kingdom joint committee on vaccination and immunisation. *Vaccine* 2010;28 Suppl. 1:A54–7, <http://dx.doi.org/10.1016/j.vaccine.2010.02.034>.
- [11] Wijesinghe PR, Palihawadana P, Peiris TSR. Participatory decision-making through the Advisory Committee on Communicable Diseases: the Sri Lankan experience. *Vaccine* 2010;28 Suppl. 1:A96–103, <http://dx.doi.org/10.1016/j.vaccine.2010.02.042>.
- [12] Muangchana C, Thamapornpilas P, Karnkawinpong O. Immunization policy development in Thailand: the role of the Advisory Committee on Immunization Practice. *Vaccine* 2010;28 Suppl. 1:A104–9, <http://dx.doi.org/10.1016/j.vaccine.2010.02.043>.
- [13] Nolan TM. The Australian model of immunization advice and vaccine funding. *Vaccine* 2010;28 Suppl. 1:A76–83, <http://dx.doi.org/10.1016/j.vaccine.2010.02.038>.
- [14] Cho H-Y, Kim C-H, Go U-Y, Lee H-J. Immunization decision-making in the Republic of Korea: the structure and functioning of the Korea Advisory Committee on Immunization Practices. *Vaccine* 2010;28 Suppl. 1:A91–5, <http://dx.doi.org/10.1016/j.vaccine.2010.02.040>.
- [15] Ismail SJ, Langley JM, Harris TM, Warshawsky BF, Desai S, Farhangmehr M. Canada's National Advisory Committee on Immunization (NACI): evidence-based decision-making on vaccines and immunization. *Vaccine* 2010;28 Suppl. 1:A58–63, <http://dx.doi.org/10.1016/j.vaccine.2010.02.035>.