Systematic Review & Meta-Ethnography: Uncertainty in Policy-Making

Methodological Comparison of Systematic Review and Meta-Ethnography: Uncertainty in the Decision-Making Process of Policy Makers Specific to the Human Papillomavirus Vaccine

By

Tamana Hafid, B.HSc.

School of Graduate Studies

McMaster University

Master of Science (2011) McMaster University

(Health Research Methodology) Hamilton, Ontario

Title: A Methodological Comparison of Systematic Review and Meta-Ethnography: Uncertainty in the Decision-Making Process of Policy-Makers in the Context of the Human Papillomavirus Vaccine

Author: Tamana Hafid, BHSc McMaster University

Supervisor: Dr. Melissa Brouwers, Ph.D.

Thesis Committee: Dr. Mita Giacomini, Ph.D.

Dr. Michelle Driedger, Ph.D.

Number of Pages: I-XV, 1-274

ABSTRACT

Objectives: (i) To determine the types and impact of uncertainty in the decision-making process of policy-makers regarding the implementation of the human papillomavirus (HPV) vaccine. (ii) To determine the relative strengths and limitations of qualitative and quantitative knowledge synthesis methodologies as well as their contributing role to the policy-making regarding the HPV vaccine.

Methods: A systematic review and a meta-ethnography were conducted concurrently. Four different search strategies, of nine different databases, were used to target all potential quantitative and qualitative literature published from 1990 to 2011. Studies were selected after abstract and full-text screening by two reviewers, with disagreements resolved by consensus. English language studies of any study design that addressed the HPV vaccine and policy were eligible for inclusion. Quality appraisal of included studies was undertaken using available criteria and tools according to study design. The criteria sets by Tong and colleagues and CASP were used for the qualitative literature while the economic evaluations were appraised with criteria set by Nujiten and colleagues. Quality of the cross-sectional study was not systematically appraised. Data extraction forms were designed for each study type. The data extracted included: study characteristics, types of uncertainty, number of types within each study, policy decision measured as the authors' final recommendation, and perceptions of the confidence of these recommendations as rated by the reviewers. Chi-square tests were conducted to determine if presence or absence of uncertainty influenced decisions. Pearsons Correlations were conducted to determine the relationship between the amount of uncertainty and perceived certainty of the decision. The qualitative analysis was conducted using steps outlined by Noblit

and Hare to determine how studies were related, to translate studies into one another, and to synthesize translations.

Results: Of the initial pool (n= 865), 21 studies met inclusion criteria and were considered; 17 quantitative and 4 qualititative. (i) The simulation cohorts of the decision analytic models did not vary by study appreciably. Chi square analyses failed to find evidence that policy decisions were influenced by presence or absence of uncertainty. Further, no statistically significant correlation was found between amount of uncertainty and perceived certainty with the funding decision. At least four types of uncertainties were identified in each qualitative study including but not exclusive to cost, public acceptance due to the sexually transmitted nature of HPV, as well as the health care system's ability to implement and monitor the vaccine. After employing the Noblit and Hare translation process, four broad types were identified: uncertainties around managing different public acceptability viewpoints, the manufacturer's role and input, the actual vaccine's characteristics, and the system's ability to implement a vaccination program. (ii) Specific and measurable outcomes could only be identified *a priori* for the quantitative studies due to the nature of questions asked. Locating relevant qualitative studies was more complex and time-consuming due to variation in the manner that each study's defining features and information are catalogued and searched. A lack of reporting in both the qualitative and quantitative studies disabled a thorough assessment of methodological quality. Data extraction only varied in the manner that the data was recorded. The quantitative results consisted of specific types of data (numerical or categorical) while qualitative results were descriptive.Within data analysis, the types of uncertainty were determined through reciprocal translation while the impact of uncertainty was tested using two statistical techniques. These

differences highlight the rigidity and flexibility of quantitative and qualitative literature, respectively.

Conclusions: Using both qualitative and quantitative methods enabled a more complete understanding of the role of uncertainty within the decision-making process. Regardless of the methodology used, each type of knowledge synthesis method provided relevant data in regards to the HPV vaccine; simply from different perspectives.

DEDICATION

This thesis is dedicated to my family and friends.

Each and every one of you has provided me with valuable insight and support.

Thank you.

ACKNOWLEDGEMENTS

This thesis was accomplished with the help of many individuals, to whom I will always be grateful.

Before anyone else, I would like to thank my supervisor, Dr. Melissa Brouwers. Her continuous support in all aspects of my life was a base of foundation throughout these past two years. With her thoughtful and knowledgeable guidance, not only was I able to reach this point, I was able to become confident in my own capabilities as a health research methodologist. I will forever appreciate the time and effort she invested towards me as both an apprentice and as an individual.

Special thanks to Dr. Michelle Driedger and Dr. Mita Giacomini for their contribution, especially in regards to the qualitative aspect of this thesis. Their help was invaluable. I would also like to thank Pavel Roshanov and James Bao for contributing their time towards being secondary reviewers.

Lastly, I would like to extend my gratitude to Sharon Garden and Lorraine Carroll for making the process as smooth and efficient as possible.

TABLES OF CONTENTS

ABBREVIATIONS

ATP-E	According to Protocol Cohort for Efficacy
CIN	Cervical Intraepithelial Neoplasia
CIN1	Grade One Cervical Intraepithelial Neoplasia
CIN2	Grade Two Cervical Intraepithelial Neoplasia
CIN3	Grade Three Cervical Intraepithelial Neoplasia
HPV	Human Papillomavirus
ICER	Incremental Cost-Effectiveness Ratio
ITT	Intention to Treat
OHTAC	Ontario Health Technology Advisory Committee
QALY	Quality-Adjusted Life Year
RCT	Randomized Controlled Trial
TVC	Total Vaccinated Cohort

CHAPTER 1: INTRODUCTION

1.1: OVERVIEW

The overall goals of this study were two-fold:

1. to explore the concept of uncertainty within the decision-making process of policy-makers as it relates the human papilloma virus (HPV) vaccine used in the prevention of cervical cancer

2. to assess and compare two knowledge synthesis techniques: systematic review of quantitative studies and meta-ethnography of qualitative studies

To achieve these goals, the types of uncertainty within the policy-making process regarding the HPV vaccine were determined through a meta-ethnography while the systematic review was used to measure the impact of uncertainty on the policy-makers' decisions. Concurrently, the steps of these two methodologies were compared and contrasted in order to identify the strengths and limitations of each knowledge synthesis methodology as well as to understand their contributing role to the health care policy-making process, specific to the HPV context.

1.2: UNDERSTANDING UNCERTAINTY – LITERATURE REVIEW

In making health care policy, decision-makers often find themselves subject to environments characterized by great ambiguity and uncertainty (Ghosh, 2004; Spring, 2008; Myriam Hunink & Glasziou, 2001). For the purposes of this thesis, Brashers' (2001) definition of uncertainty was employed: "a state of being when details of situations are ambiguous, complex, unpredictable or probabilistic, when information is unavailable or inconsistent and when people feel insecure in their own state of knowledge in general".

The concept of uncertainty is highly relevant in cancer control, where small benefits from treatments, for example, are often associated with major costs and/or harmful side effects (Bruinvels, Stiggelbout, Kievit, van Houwelingen, &Habbema, 1994; Mullens, Montgomery, & Tunis, 2010). For instance, bevacizumab, a monoclonal antibody commercially known as Avastin, is currently used to treat colon cancer by inhibiting tumour angiogenesis (Hurwitz &Saini, 2006). While mean survival duration is increased by 4.7 months, side effects may include hypertension, proteinuria, thromboembolism, excessive bleeding, and gastrointestinal perforations, among others (Hurwitz et al, 2004; Hurwitz & Saini, 2006). Furthermore, when used as part of a first line treatment for metastatic colorectal cancer in British Columbia, Canada, its cost can range from $38,900 to $85,800 per Quality Adjusted Life Year (QALY) depending on the different clinical parameters used (Villa, Hedden, Peacock,&Kennecke, 2010). In such a scenario, the decision awaiting the policy-makers is not clear.

Many different matters may require reflection. For instance, the probability of positive outcomes demonstrated in clinical trials may or may not be realized in a real world setting, where the patient population could potentially be more vulnerable to the adverse events. Furthermore, the extent of the data's definiteness regarding effectiveness, adverse events, or costs may be unclear and the data are likely to evolve over time. Thus, policy-makers may ask themselves whether they feel secure that the current base of knowledge is dependable enough to finalize reasonable decisions. As a consequence, they may also inquire about any gaps in knowledge, their importance, and whether decisions can be made in the absence of having the gaps filled. In such scenarios, one can contemplate elements of uncertainty that align with Brashers' concept, thereby adding complexity to the policy-making process.

Similar scenarios with other types of cancer and their respective available treatments are common place (Loveman et al, 2010; Jones et al, 2004), thereby leaving policy-makers responsible for determining the best course of action with respect to treatment access and funding in the midst of great uncertainty (Mullens, Montgomery, &Tunis, 2010). Factors, in addition to cost-effectiveness and economics, can create an uncertain environment in which policy decisions must be made including conflicting political agendas of both governmental and nongovernmental organizations, pressure from the public and/or patient advocacy activity, pressure from industry, and access limitations (Mays et al, 2009). Furthermore, different types of policy decision-making processes may trigger different types of uncertainty. For example, what does funding the HPV vaccine mean; acquisition of the vaccine only or a population-based programmatic approach that might include monitoring and data collection? Thus, one might encounter a breadth of potential policy decisions and varied types of uncertainty depending on decision parameters.

Though there are some existing methods that aim to represent the concept of uncertainty, their application or interpretation within the policy context may be limited (Ottawa Hosptial Research Institute, 2009; Politi Han & Col, 2007; Rycroft-Malone, Fontenla,Seers, &Bick, 2009). For example, statistical metrics of variance can provide direction about precision of an estimated effect, expected generalizability to a population, and anticipated relative and absolute differences from existing standards. However, such metrics are typically not presented in a manner that is accessible to policy-makers. In addition, these methods tend to represent a single perspective.

As policy-makers are beginning to rely on substantial evidence within the decision-making process, a better understanding of uncertainty as it relates to policy decisions is

warranted. For instance, in 2003, the province of Ontario established the Ontario Health Technology Advisory Committee(OHTAC), which consists of an expert committee devoted to recommending the best health technologies to the Ontario health care system as well the Ontario Ministry of Health. The goal of the committee is stated as "bridg[ing] the worlds of science and health care decision-making by applying the best available evidence from around the world and across the province, to the unique needs of Ontario patients, providers, facility administrators and policy decision-makers" (Ontario Health Technology Advisory Committee, 2011). Determining the types and impact of uncertainty could potentially aid in the development of useful strategies and frameworks for policy-makers, such as OHTAC, when they are trying to contend with uncertainty in the decision-making process in the real world context. Through this new knowledge, not only could policy-makers be supported when identifying sources of uncertainty, tools and resources could be created to aid them when navigating through said uncertainty in order to arrive at a reasonable final decision based on the up-to-date evidence. However, to create tools and resources to support these stakeholders, a better understanding of this concept is required.

1.3: The Clinical Scenario– Literature Review

Within this project, the role of the HPV vaccine in the prevention of cervical cancer served as the case study. This case is defined by controversy and significant sources of uncertainty, thereby making it an appropriate area to begin a systematic inquiry of the uncertainty concept in a health policy context.

1.3.1: Understanding Cervical Cancer

Cervical cancer is mainly comprised of two general types of carcinomas (Katz, Lentz, Lobo, &Gershenson, 2007). While 80 to 85% are squamous cell carcinomas, the remaining 15 to 20% are adenocarcinomas. Prior to the development of carcinoma, the cells undergo abnormal growth that could potentially become premalignant, known as cervical intraepithelial neoplasia (CIN). There are three stages involved, known as grades one, two, and three (Katz et al, 2007). Grade one CIN (CIN1) consists of mild dysplasia within one third of the cervix's basal epithelium. Grade two CIN (CIN2) is progressively worse with moderate dysplasia within two thirds of the cervix's basal epithelium. Lastly, grade three CIN (CIN3) involves severe dysplasia that spans through the majority of the basal epithelium.

The primary symptom of cervical cancer includes irregular bleeding or discharge. As the disease advances, however, back pain, loss of appetite, and weight loss become common. While the patients' median age has typically been 52, a specific type of cervical cancer, known as preinvasive intraepithelial carcinoma, has become more prevalent in younger women who are in their 20s (Katz et al, 2007). In 2008, cervical cancer was the third most widespread cancer in women worldwide with 529,409 new cases and 274,883 deaths (WHO/ICO Information Centre on HPV and Cervical Cancer, 2010). Its impact was greatest in the developing world where the crude rate, at 1.9, is more than double that of the developed world, at 0.8. For instance, Eastern Africa had the highest age standardized incidence rate at 34.5 per 100,000 compared to Australia and New Zealand, which had the lowest rate at 5.0 per 100,000. Specific to Canada, though cervical cancer mortality rate has decreased by 3.4% from 1997 to 2006, the estimated number of new cases was 1300 while the estimated number of deaths was 370 in 2010 (Canadian Cancer Society's Steering Committee on Cancer Statistics, 2010). Thus, this disease is not inconsequential with respect to morbidity or mortality.

1.3.2: ROLE OF HPV IN CERVICAL CANCER

Early debut of sexual activity along with a higher frequency of sexual contacts are associated with the development of cervical cancer (Katz et al, 2007). Though these factors may increase an individual's chances of developing cancer, their presence does not guarantee it. A necessary cause of cervical cancer is infection with HPV. This link has been established by using eight standard methodology criteria: strength of association, consistency, specificity, temporality, biological gradient, plausibility, coherence, and experimental evidence (Bosch, Lorincz, Munoz, Meijer,& Shah, 2002). Early work using data from nine multi-region case-control studies established the criteria of association and consistency. Specifically, an average HPV prevalence greater than 90% was reported for the cervical cancer cases compared to the controls, whose average prevalence was below 20%; thus establishing a clear strength of association between the virus and the cancer. Subsequent studies supported these observations (Chichareon et al, 1998; Herroro et al, 2000; Thomas et al, 2001). As such, the international medical community has come to a consensus regarding the higher potential for developing cervical cancer when infected with HPV; indeed, no published studies that challenge this assertion have been found.

Though there are 100 different types of HPV, only 15 have been demonstrated as causing cervical cancer (Bosch et al, 2002). Of these 15 types, HPV 16 and HPV 18 have been linked to 50% and 10% of invasive cervical cancers, respectively. Furthermore, different types of strains have been associated with different types of cervical cancer. For instance, while adenocarcinomas and adenosquamous cell carcinomas have been linked to HPV types 16, 39, 45, and 59, squamous cell carcinomas seem to be a result of HPV types 18, 31, 35, and 52 (Bosch et al, 1995; Lacey et al, 2001). As such, the specificity criterion is fulfilled by the systematic

patterns that exist in regards to the development of cervical cancer from HPV. This leads to temporality, the bounded timeline between HPV exposure and cervical cancer, which if unfulfilled rules out causality, regardless of the other fulfilled criteria. In this context, temporality has been established through many different methods, including cross-sectional studies, follow-up studies, and retrospective studies (Bosch et al, 2002). In addition, studies, which aimed to either discover key determinants of cervical cancer or demonstrate the specificity of preventative methods, also proved the temporality aspect of this association (Bosch et al, 2002).

The last four criteria all revolve around the biological aspect of infection leading to cervical cancer. With respect to gradient, a nested case-control study demonstrated that the higher the viral load of HPV 16, the higher the odds that the individual was a case (Ylitalo et al, 2000). Additionally, the plausibility and coherence of the association is in accordance with already established scientific knowledge and norms. Though all the details of the mechanism involved in carcinogenesis have not yet been documented, the basic pathway has been ascertained and agreed upon (Bosch et al, 2002). The last criterion, experimental evidence, requires studies to demonstrate a decrease in cervical cancer incidence rates as a result of a decrease in HPV infection incidence rates. This work is on-going as prevention studies and programs targeting HPV as a population-based screening tool are currently being developed and implemented.

As the eight methodological criteria have all been adequately fulfilled, the research and clinical community agree with great certainty that specific types of HPV lead to the development of cervical cancer. Since this is the first time that a virus has been established as a necessary

cause of a cancer, it is not surprising that international efforts to develop a prophylactic vaccine for cervical cancer followed shortly.

1.3.3: HPV VACCINE

Presently, two vaccines are available for the prevention of cervical cancer. Though both vaccines, known as Gardasil and Cervarix, protect the patient against HPV types 16 and 18, Gardasil also protects against HPV types 6 and 11, which cause approximately 90% of genital wart cases (Katz et al, 2007). Rambout, Hopkins, Hutton, & Fergusson (2007) conducted an independent systematic review of randomized controlled trials (RCTs) examining the efficacy and adverse events associated with the HPV vaccine. A total of nine studies were included in the final analysis; six were RCTs and three were follow-up reports. The RCTs included 40,323 females in total, whose age ranged from 15 to 25. As recruitment occurred in developed countries, the majority of the participants were white but Hispanic, Asian, and black women were also included. Since over 90% of the participants had not previously encountered any abnormal Papnicolaou test results, the efficacy of the vaccine could be critically assessed without clinical confounders. Three of the studies administered the quadrivalent vaccine, two administered the bivalent one, and one administered a monovalent vaccine targeting only HPV 16. The authors of the systematic review judged the primary studies' methodological quality as high based on 5/5 Jadad scoring system.

The meta-analyses were conducted based on both per-protocol and modified intention to treat (ITT). For the development of high grade cervical lesions, including CIN2 and higher, the odds ratio was 0.14 in the per-protocol analysis and 0.52 in the modified ITT analysis. Therefore, the odds of a vaccinated woman developing cancer were 0.14 or 0.52, respectively, times that of woman not vaccinated against HPV. For cervical lesion, including CIN1, the odds

ratio was 0.13 for per-protocol analysis and 0.36 for the modified ITT analysis. As such, the systematic review concluded that the HPV vaccine is highly efficacious in preventing cervical cancer. With respect to adverse effects, the odds ratio was 1.0, meaning that there were no significant differences between the women who were vaccinated and those who were not. However, in both the initial and follow-up studies, the participants were examined for a short-term interval only ranging from 14.8 months to 60 months. As such, the long-term consequences of the vaccine, in regards to both waning immunity and the development of other adverse events, have yet to be examined. From a policy perspective, these issues create significant sources of uncertainty. Although an updated systematic review is currently underway (Arbyn et al, 2011 of the Cochrane Collaboration), it is unlikely that the additional data will be able to address these outlying issues.

As Gardasil and Cervarix were manufactured by Merck & Co and GlaxoSmithKline, respectively, multi-centre trails examining the efficacy and safety of their respective vaccines were conducted. Two of the largest and highest quality trials will be described here. In two phase III RCTs, named FUTURE I and II, the efficacy of the quadrivalent vaccine, Gardasil, was examined (Garland et al, 2007; FUTURE II Study Group, 2007). Both studies were double-blinded and placebo-controlled. The sample size of the FUTURE I study consisted of 5455 females between 16 to 24 years of age and the FUTURE II study consisted of 12,167 females between 15 to 26 years of age. As the vaccine is injected in three doses, the participants received them on the first day followed by the second and sixth month. The only difference between the studies was the Pap screening frequency, which was every six months in the FUTURE I study and 12 months in the FUTURE II study. After being followed for three years in the FUTURE I study, the efficacy of the vaccine against all grades of CIN was 100% (Refer to Table 1) as

determined in the per-protocol analysis. However, when the ITT analysis was conducted, the efficacy varied drastically across the different grades (Refer to Table 1). The same trend was observed in the FUTURE II study. In the per-protocol analysis, the vaccine's efficacy ranged from 97% to 100% depending on the grade while in the ITT analysis, the range was from 28% to 57% (Refer to Table 2).

The ITT analysis is based on the group to which the participant was randomized, regardless if she actually received the completely prescribed intervention, thereby measuring effectiveness. In contrast, the per-protocol analysis result is based on the actual exposure to prescribed intervention, thereby measuring efficacy. Thus, while the data demonstrate that the quadrivalent HPV vaccine is efficacious and effective, the magnitude of the latter is significantly less compelling.

Similarly, the efficacy of the bivalent vaccine, Cervarix, was examined through a phase III RCT funded by GlaxoSmithKline (Paavonen et al, 2007). While this study was also double-blinded, the comparator used was a Hepatitis A vaccine instead of a placebo. The sample size was 18,644 and the women's age ranged from 15 to 25. Though the participants received the three doses, instead of receiving the second dose at the end of the second month, they received it at the end of the first month. Once again, different types of analyses were conducted. The total vaccinated cohort (TVC) included women who had received at least one dose of the vaccine, and who had data available for the end points while the according to protocol cohort for efficacy (ATP-E) consisted of those had received all three doses, who met all eligibility criteria, and who had normal or low-grade cytology at baseline. As such, the ATP-E group actually measured efficacy and the TVC group measured effectiveness. The efficacy of the bivalent vaccine was 92.9% and 80.0% for the prevention of CIN2 and CIN3, respectively, while the effectiveness

was 52.8% and 33.6% (Refer to Table 3). Once again, the magnitude of the vaccine's effectiveness is much lower. Thus, how the HPV vaccine will actually play out in the real world context is unknown.

Though these studies demonstrate the vaccines' ability to adequately prevent the development of cervical cancer, uncertainty in regards to effectiveness, waning immunity, and long term adverse events still exist. Furthermore, as these RCTs were industry-sponsored, their results must be critically analysed. Lexchin, Bero, Djulbegovic, & Clark (2003) conducted a systematic review examining whether the source of funding of clinical studies biases their outcomes. They demonstrated that the odds of a favourable outcome was 4.05 (95%: 2.98 to 5.51) times greater in studies that were funded by pharmaceutical companies compared to those, which were funded by other sources. Thus, the potential risk of overinflated benefits of the industry-sponsored tests of the vaccine cannot be ignored.

1.3.4: Decision-Making Regarding the HPV Vaccine

Since cervical cancer is a worldwide health burden, the HPV vaccine became incorporated into the decision-making process of policy-makers all over the world. According to a policy analysis by Haas et al (2009), Gardasil was licensed for use by 2006 in many high-income countries. Regardless of the differing prices across these countries, the vaccine was also publicly funded around the same time in many developed countries (Refer to Table 4).

In Australia, for example, the vaccine's implementation became a source of national interest as Dr. Frazer, the recipient of the Australian of the Year award in 2006, played a significant role in its development (Roughead, Gilbert, &Vitry, 2008). When the vaccine's initial proposal was rejected by Pharmaceutical Benefits Advisory Committee due to cost

concerns, there was a public and media backlash. This resulted in an accelerated decision-making process where the HPV vaccine was soon implemented. However, the vaccine was not as warmly received in other parts of the world (Dekker, 2008). In the United States, although 24 states proposed bills that would make the HPV vaccine a requirement for middle school enrolment, only two states, New Jersey and Virginia, were able to sign the bill and implement the vaccine policy. In a policy analysis focusing on the introduction of a school-based HPV vaccine program in Kentucky, the mandate did not go through. This was a result of differences in opinions regarding the consequences of the vaccine's introduction. While Democrats focused upon the vaccine's capability to decrease the incidence and mortality rates of cervical cancer, the Republicans focused upon the social consequences. Some feared that such a mandate would not only take away parental decision-making rights, but would also increase sexual activity in adolescents. While there is clarity in the various positions, how policy-makers ought to manage this variability is unclear.

Within the Canadian context, the Ontario Ministry of Health and Long Term Care approved the implementation of an HPV vaccine program in 2007 (Boyle, 2009). It is a school-based program where grade eight girls are immunized by visiting public health nurses. However, the introduction of the vaccine has been met with controversy. The Huron-Superior Catholic District School Board disallowed their schools from participating in the program (Kirkwood, 2008). The board stated that their decision was based upon both their ideology of abstinence before marriage and uncertainty regarding the medical risk. In addition, the Ontario Conference of Catholic Bishops not only supported the parents' right to decide if their daughters should be vaccinated, but also linked the program to sexual sin. They also stated that the evidence regarding the vaccine was insufficient. Due to the low participation rate of 50% in Ontario,

Kirkwood states that such misinformation may further hinder the program's ability to reach an optimal degree of public immunity.

Though these policy analyses differ in their outcome, they collectively demonstrate that the implementation of the HPV vaccine has become a major concern for policy-makers in different regions of the world. In addition, they also establish that different groups of individuals within the same society may have differing opinions concerning the vaccine. Therefore, when policy-makers undergo the decision-making process, a core crux of the uncertainty they experience is how to manage such disagreement. As seen in these scenarios, uncertainty does not exclusively exist as a result of the vaccine's scientific features. As such, using the HPV and the HPV vaccine as a case to begin a systematic analysis of issues related to the types and impact of uncertainty in health care policy is justified.

1.4: KNOWLEDGE SYNTHESIS: TOOLS TO EXPLORE UNCERTAINTY IN HPV VACCINE

Determining the types and impact of uncertainty specific to the HPV vaccine for the treatment of cervical cancer can be accomplished through knowledge synthesis. This is the second step within the knowledge funnel of the Knowledge to Action Cycle (Graham et al, 2006). As described above, a comprehensive knowledge synthesis regarding uncertainty and the HPV vaccine can be considered a critical precursor before tools can be designed to help policy-makers navigate uncertain situations. While knowledge synthesis results in the development of second generation knowledge, and thus, requires consideration of primary studies, choosing which method(s) of knowledge synthesis is (are) most appropriate, in order to understand an issue, is open to debate. Indeed, CIHR provides guidance on over six different strategies considered appropriate in its support of knowledge synthesis research (Canadian Institute of

Health Research, 2011). To enable a comparison of quantitative and qualitative methods, the systematic review and the meta-ethnography will be conducted.

To date, this project will be the first to undertake such a goal. This may be due to the ontological and epistemological differences between the two methodologies. Giacomini (2010) defines ontology as "beliefs about the basic entities that make up reality" and since epistemology signifies the "how" question, specifically how researchers carry out the investigation of their respective phenomena, ontological differences in ideology inevitably lead to epistemological differences.

In regards to ontology, quantitative research maintains a realist stance, which states that researchers can empirically assess social and natural truths independent of their own ideas regarding the world (Giacomini, 2010). A researcher could potentially assume an objectivist/positivist epistemology within their inquiry. This type of epistemology aims to determine empirical facts, as unaltered by the researcher's views or beliefs. For instance, within quantitative health research, hypothesis testing experimentation mainly assumes a falsificationist epistemology. Instead of aiming to prove a theory, rigorous methodology is undertaken to ascertain theories as the truth by continually failing to falsify them. As such, null hypotheses are a fundamental foundational component within quantitative research, specifically in regards to any statistical analyses.

On the other end of the spectrum, qualitative research maintains an idealist stance, which states that researchers can only assess these truths through their own ideas and subjective experiences (Giacomini, 2010). As such, the idealist researcher could potentially undertake an interpretive epistemology, which clearly recognizes that the world is inherently composed of

ideas, whether it is regarding nature or society. Researchers are considered to be an integral component of the process itself since they are deemed as unable to take an impartial stance towards that which is being observed. In order of greater generalizations regarding the real world phenomena, phenomenology, ethnography, and grounded theory are all qualitative methodologies, which may be undertaken.

Only one type of epistemology, pragmatism, takes into account both ontological ideologies (Giacomini, 2010). To correspond with a realist position, societal and natural phenomena are stated as existing regardless of human ideas. However, these phenomena can only be apprehended through human ideas, thereby also concurring with an idealist position. Due to underlying belief that practical problems, not methodological and theoretical imperatives, initiate researchers' interest, different methodologies can be used to assess the same problem (Creswell & Plano Clark, 2007). However, the outputs may differ in the perspectives they provide regarding the question posed. This epistemology is commonly assumed in mixed methods research, which combines both quantitative and qualitative methodologies in order to address real-world problems (Creswell & Plano Clark, 2007).As such, both biased and unbiased perspectives of the problem may be presented.

Since the methodological goal within this project is to compare quantitative and qualitative knowledge synthesis methods to address a real-world question, a mixed methods approach will be undertaken. As such, the assumed epistemology will be pragmatism while the assumed ontology will be both realism and idealism.

1.4.1: Quantitative: Systematic Review

Currently, systematic reviews are considered the gold standard for synthesizing quantitative empirical studies (Higgins & Green, 2009). By using explicit and systematic methods, the objective is to gather all the current evidence relevant to a specific question in order to provide an answer. Currently, the Campbell Collaboration's systematic review methodology comprises of eight steps: 1) formulating a review question, 2) defining inclusion and exclusion criteria, 3) locating studies, 4) selecting studies, 5) assessing study quality, 6) extracting data, 7) analyzing and presenting results, and 8) interpreting the results (Turner & Nye, 2007). Due to the specific search and selection criteria, this approach enables reproducibility, which decreases the likelihood that the findings are biased. Indeed, a systematic review is able to frame all elements of a research question including data on pre-specified outcomes of interest. However, as the focus of these reviews has primarily been upon experimental quantitative research, historically RCTs, the methodology itself does not cater to qualitative studies or research activities aimed at framing a new concept (Petticrew & Egan, 2003).

1.4.2: Qualitative: Meta-Ethnography

An empirical and methodologically sound review of qualitative studies can be accomplished through the use of an alternative knowledge synthesis strategy: the meta-ethnography (Campbell, Britton, et al, 2003a). Though initially derived in the education field by Noblit and Hare in 1988, the last decade has demonstrated greater use of this technique within the health care field, particularly as it relates to the synthesis of qualitative research (Campbell, Pound et al, 2003; Malpass et al, 2008). The objective of meta-ethnographies is to produce an understanding of a specific concept by not only analyzing the ideas set forth by the primary qualitative studies, but by also comparing them to each other in a systematic manner to develop a

more comprehensive, and presumably, complete understanding of a phenomenon (Atkins et al, 2008).

The process as set out by Noblit and Hare (1988) is comprised of seven steps: 1) getting started, 2) deciding what is relevant to the initial interest, 3) reading the studies, 4) determining how the studies are related, 5) translating studies into one another, 6) synthesizing translations, and 7) expressing the synthesis. As the second step is very broad, Atkins et al (2008) recently further divided this step in terms of the meta-synthesis approach: 'defining the focus', 'locating relevant studies', 'deciding upon studies to include', and 'assessing the quality of included studies'. Rather than just restating the ideas, a meta-ethnography aims to interpret them in order to develop a general concept, which encompasses all the relevant elements represented within the individual studies. However, since the interpretation itself is highly subjective depending on the reviewers, reproducibility of a meta-ethnography can prove challenging (Politi et al, 2007; Atkins et al, 2008)

1.5: Putting It Together: Research Questions

Due to the presence of uncertainty within the decision-making process of policy-makers, as well as the increasing use of evidence within said process, a better understanding of the concept is vital. However, to optimize this goal, this project will seek to simultaneously implement a systematic review and a meta-ethnography, to assess the unique yield resulting from each strategy. Thus, this thesis aims to advance understanding of uncertainty in the context of health care decision-making and advance understanding of the unique contributions of two knowledge synthesis strategies. Thus, the specific research questions that will be answered are:

Methodology

1. What are the relative strengths and limitations of the two knowledge synthesis methodologies, systematic review versus meta-ethnography?
2. What is the contributing role of each method to knowledge synthesis regarding the role of uncertainty in a health care policy-making process regarding HPV vaccine?

Content

1. What are the types and impact of uncertainty in the decision-making process of policy-makers in regards to the implementation of the human papilloma virus vaccine?

CHAPTER 2: METHODS

This thesis is part of a larger program of research entitled, 'Advancing quality in cancer control and cancer system performance in the face of uncertainty', directed to explore the role in of uncertainty in policy formation. This program of research is defined by four key objectives:

1. to define uncertainty and identify specific types and sources of uncertainty that decision-makers experience
2. to identify mechanisms of possible impact and evidence of actual impact of these sources of uncertainty on decision-making
3. to identify candidate strategies to assist stakeholders in navigating or mitigating uncertainty
4. to develop a draft instrument that will reliably measure sources of uncertainty

For the purposes of this thesis, only the first and second objectives were considered in regards to decisions about the HPV vaccine. Since policy decisions regarding the approval of the vaccine for licensing are typically undertaken by separate governmental bodies, such as the Food and Drug Administration in the United States (US. Food and Drug Administration, 2010), uncertainty in such scenarios was not the focus of this project.

A systematic review of the quantitative literature and a meta-ethnography of the qualitative literature were undertaken (Refer to Table 5). The operationalization of each step of the methodology is described, in turn, below.

2.1: 'FORMULATING REVIEW QUESTIONS' VS. 'GETTING STARTED'

The first step with either methodology is always the development of a question, which is paraphrased as 'formulating review question' for systematic reviews and 'getting started' for

meta-ethnographies (Refer to Table 5). However, the type of question being posed varies depending on the research being synthesized.

In the context of the systematic review, the following question was used to determine the impact of uncertainty:

In the context of HPV vaccine, what is the impact on policy decisions of exposure to information that is uncertain compared to a context defined by little or no exposure of uncertain information?

Following methodological standards using PICO (population, intervention, comparison and outcome) or PECO (population, exposure, comparison, outcomes), the four rubric elements of a question can be used to frame it out as:

P (Population): the health care dilemma regarding the implementation of the HPV vaccine within the decision-making process

I (Intervention)/E (Exposure): Exposure to uncertain information

C (Comparison): different level of uncertainty (none or lower)

O (Outcome): policy decision

In contrast, and as a tool to identify the types of uncertainty, the meta-ethnography aimed to address the following question:

What are the different types of uncertainty that policy-makers experience within the decision-making process in regards to the implementation of the HPV vaccine? How does it influence decision?

2.2: 'ELIGIBILITY CRITERIA' VS. 'DEFINING THE FOCUS'

For the systematic review, this next step is known as 'defining exclusion and inclusion criteria'. For the meta-ethnography, this stage is known as 'defining the focus', which is the first element of 'deciding what is relevant to the initial interest' (Refer to Table 5).

2.2.1: SYSTEMATIC REVIEW

As the impact of uncertainty within the HPV vaccine context can be discovered in a variety of quantitative study designs, the eligibility criteria must be sensitive enough to ensure that all potentially relevant articles are not excluded. As such, this systematic review included all types of quantitative study designs, including observational, quasi-experimental, and experimental, such as RCTs. In addition, both comparative and single arm studies were included.

Regardless of the design, the primary studies had to focus on decisions regarding resource allocation within the policy-making process. The disease context was specific to the implementation of the HPV vaccine for the prevention of cervical cancer and other HPV-related diseases. Studies that articulated any aspect of uncertainty associated with policy formation regarding the HPV vaccine were eligible such as, but not limited to, cost-effectiveness, judgements regarding benefits versus risk, acceptability by society or patient, normative culture values (society or health care system), etc. Studies had to report on a decision-making outcome operationalized here as resource allocation for a policy that was either supported or denied. The setting, language, and year restrictions were to a health care policy-making process, English, and from 1990 onwards, respectively. While the language restriction was simply selected due to time constraints, the date restriction was selected since the first paper to establish a link between HPV and cervical cancer was published in 1992 (Guerrero et al, 1992). Studies focusing uncertainty as a result of individual personality differences between the policy-makers were not eligible

(Sorrentino & Roney, 2000); the uncertainty had to be tied to policy formation and the HPV vaccine. The impact of said exposure, which included all types and measures of uncertainty, upon the final policy decision also had to be explored.

2.2.2: META-ETHNOGRAPHY

For the meta-ethnography, strict eligibility criteria in regards to study design were not employed; all different types of qualitative methodologies were included. However, the focus of the study had to be on articulating types of uncertainty in regards to the implementation of the HPV vaccine within the decision-making process. Once again, the setting was restricted to a health care policy-making process, the language restriction was English, and the publication year had to be from 1990 onwards.

2.3: 'SEARCH STRATEGY' VS. 'LOCATING RELEVANT STUDIES'

The development and implementation of a search strategy was conducted in order to fulfill the third step, which is 'locating studies' for the systematic review and 'locating relevant studies' for the meta-ethnography (Refer to Table 5). An iterative and staged approach was used.

2.3.1: STAGE ONE: ORIGINAL SEARCH STRATEGY

To be as broad as possible and recognizing that many of the eligibility criteria did not translate into MeSH terms, as often is the case in searching electronic databases, three main concepts were targeted that informed the strategy: the HPV vaccine itself, the decision-making process of policy-makers, and uncertainty. Regardless of whether the study was quantitative or qualitative, all three criteria had to be met. Therefore, an original search strategy without any restriction on study design or perspective was conducted to scope out the research environment.

A comprehensive search strategy was composed to ensure the inclusion of all applicable databases that could potentially yield relevant articles. All search strategies were developed with the assistance of a health sciences librarian from the Health Sciences Library at McMaster University.

The nine databases, which were searched, included *Medline, Embase, HealthStar, PsycInfo, Global Health, Web of Science, CINAHL, Sociological Abstracts,* and lastly, *Scopus.* The only restriction placed upon the searches was of publication year. If 1990 was not available, the closest prior year was selected. For instance, 1988 onwards was selected for *Medline* while *Global Health* was searched from 1973 onwards.

Depending on each database, all terms were searched in the following formats: MeSH, key, and text. Therefore, in addition to the different terms for the same concept, the terms were also searched in different ways. The formatting for the search strategy is summarized in Figure 1. Reading the figure from left to right, the different terms for 'decision-making' were 'OR'ed and 'policy' were 'OR'ed. These two sets of results were subsequently 'AND'ed together to retrieve candidate articles that had both of these concepts. After 'OR'ing all the terms for 'policy-making', this search result was 'AND'ed with the previous pool; in doing so all the articles, which addressed concept of 'decision-making process of policy-makers' were captured. For the other main concepts of 'HPV vaccination' and 'uncertainty', their respective terms were simply 'OR'ed together to attain all relevant articles. Subsequently, the final articles were retrieved after the three main concepts were 'AND'ed together. The detailed search strategies, specific to each database, can be found in Appendix 1.

2.3.2: Stage Two: Qualitative Search Strategy

The original search strategy only returned one study that fit the qualitative study criteria. Thinking that the concept of uncertainty might not be explicitly stated, it was hypothesized that relevant qualitative articles might not have been retrieved because of the 'uncertainty' restriction. Therefore another search strategy was developed, which included the following three concepts: 'HPV vaccine', 'decision-making process of policy-makers', and 'qualitative design'. The search strategy employed was similar to the one outlined in Figure 1. However, instead of uncertainty, the terms for 'qualitative' were initially 'OR'ed and then,'AND'ed with the other two concepts.

Due to the lack of a gold standard defining the best search strategy and terms to use for the 'qualitative' concept, multiple search strategies were used, as advised by the health sciences librarian. This was to ensure the retrieval of all potentially relevant articles. As demonstrated in Figure 2, the terms for 'qualitative' were ORed in five different ways: the librarian strategy, the Wong et al (2004) strategy (except for CINAHL, which underwent the strategy by Wilczynski et al (2007)), and the three different strategies by Shaw et al (2007). The librarian strategy included keywords that were derived with the help of a health sciences librarian from the Health Sciences Library at McMaster University. Search terms, therefore, consisted of variations of 'qualitative', 'survey', 'interview', 'focus group', 'questionnaire', 'experience' and 'theme'. The strategy by Wong et al (2004) and Wilczynski et al (2007) involved fewer terms, which were 'interview', 'experience', and 'qualitative' for the former, and 'interview', 'audio recording' and 'qualitative' for the latter. The terms of the different strategies, including the thesaurus, free-text terms, and broad-based terms strategies, outlined by Shaw et al (2007) can be found in Table 6, 7, and 8. As the same nine databases were searched along with the five different 'qualitative' strategies, 45 different strategies were conducted for the qualitative search strategy (Refer to Appendix 2).

2.3.3: Stage Three: Additional Search Tactics

Moreover, in order to ensure that all potentially relevant articles were included, two additional strategies were used. First, the references of the final articles from the original search strategy were included and underwent screening. Second, a "plus one link" strategy was incorporated. This strategy uses the "related articles" feature on electronic database search outputs as a source of new studies. Specifically for this project, the 'related articles' of articles judged as relevant and meeting qualitative search criteria from the original search strategy were also included.

2.4: 'Selecting Studies' vs. Deciding upon Studies to Include

After all the potentially relevant articles were retrieved, this next step was to 'select studies' for the systematic review and 'decide on studies to include' for the meta-ethnography (Refer to Table 5). As recommended by the Cochrane Collaboration (Higgins & Green, 2009), the retrieved articles underwent screening at three levels: title, abstract, and full-text (Refer to Figures 3, 4, and 5). This process was undertaken for both methods.

2.4.1: Title Screening

All the title screening for the results of the four search strategies was conducted by a single reviewer (TH) in order to ensure consistency. The previously outline eligibility criteria were used for inclusion and exclusion decision. If the reviewer was uncertain, the title was automatically included in order to ensure that potential articles were not excluded. For the citations from the original search strategy, after duplicate removal, the number decreased from 153 to 73, which were, then, title screened. Sixteen titles were ineligible, resulting in a total 57 citations that proceeded forward (Refer to Figure 3). The numbers were slightly higher for the

citations from the qualitative search strategy. While there was an initial 244 citations, it decreased to 110 after duplicate removal. It was further reduced to 76 after title screening (Refer to Figure 4).

Using the additional search methods, a total of 366 additional citations were initially retrieved from the "references" strategy: 330 titles were ineligible, 11 were duplicates, resulting in total of 25 additional citations (Refer to Figure 5). For the "plus one link" strategy, there was an initial sum of 102 citations, of which 47 were ineligible after title screening. Since there were no duplicates, 55 citations proceeded forward (Refer to Figure 5).

Thus across all search tactics, 213 studies were candidates for the abstract screening step.

2.4.2: Abstract Screening

To reduce human error, abstract screening was conducted independently by two reviewers: the author (TH) and one of three additional research methodologists (JB, PR and SG). The abstract screening was conducted separately for each search strategy and in a staged approach. For each abstract, and using the specified eligibility criteria, each reviewer independently classified the abstract as included, excluded or maybe. Reviewers were required to provide their rationale for any abstract classified as excluded or maybe. However, while the author (TH) provided reasoning for all the different search strategies, only one secondary reviewer (JB) did so as well. Consensus was used to negotiate disagreements. All abstracts classified as maybe made it to the next level of screening.

From the original search strategy, 57 abstracts were screened by two reviewers (TH and JB) (Refer to Appendix 3). A kappa rating of 0.72 (95% CI: 0.54 to 0.90) between the two

reviewers was achieved indicating the strength of agreement was strong. A total of 30 abstracts proceeded to the next step after 27 were considered ineligible.

Seventy-six abstracts underwent screening from the qualitative search strategy (Refer to Appendix 4). A different secondary reviewer, PV, participated and did not provide reasoning for exclusions or maybes. Though the kappa score, at 0.63 (95% CI: 0.45 to 0.81) was not as strong as the previous one, the strength is still considered reasonable. After consensus was attained, only 27 underwent full-text screening.

For the references strategy, the secondary reviewer was SG and reasoning was, once again, not provided (Refer to Appendix 5). The strength of association was very good with a kappa score of 0.75 (95% CI: 0.48 to 1.01). Though 16 abstracts were considered eligible from the initial 25, two were duplicates from other search strategies, thereby resulting in 14 studies proceeding forward. Lastly, for the "plus one link" strategy, the secondary reviewer was PR without explaining their reasoning (Refer to Appendix 6). The kappa score was relatively strong at 0.74 (95% CI: 0.57 to 0.92). Out of the 55 abstracts that underwent screening, 31 were considered ineligible while five were duplicates from other search strategies. Therefore, only 19 articles underwent full-text screening.

Following the abstract screening, 90 studies were eligible to proceed to full text screening.

2.4.3: Full-Text Screening

Unlike abstract screening, full-text screening was conducted with the aid of screening forms that incorporated the eligibility criteria (Refer to Appendix 7). For the quantitative studies, the following questions had to be answered with either yes, unclear, or no: whether the context

was specific to the HPV vaccine, whether the primary focus was on decisions regarding resource allocation within the policy-making process, whether there was a health care dilemma regarding the implementation of the HPV vaccine within the decision-making process, whether there was exposure to uncertainty, whether it was compared to other levels of uncertainty, and lastly whether there was a final recommended policy decision. For the qualitative studies, the questions consisted of whether the context was specific to the HPV vaccine and whether the primary focus was regarding different types of uncertainty within the decision-making process. In addition, both qualitative and quantitative studies had to be in English and published after 1990.

Two independent reviewers (TH and either PR or SG) completed this stage of screening independently. The first step was to determine whether the article was a quantitative or qualitative research study, excluding those that did not meet either criterion. Subsequently, the article was independently reviewed using the appropriate form. Reviewers answered each screening question as yes, no or maybe and provided a final decision to include or exclude the study. In case of any disagreements, the reviewers would discuss their reasoning until a consensus was reached.

For the original search strategy, 30 articles underwent full-text screening by both TH and PR (Refer to Appendix 8) resulting in a kappa of 0.79 (95% CI: 0.52 to 1.06). After consensus, only five articles were included into integrated review. The secondary reviewer of the articles from the qualitative search strategy was SG (Refer to Appendix 9). The kappa was 0.73 (95% CI: 0.39 to 1.08). Out of the 20 articles screened, 15 were considered ineligible, thereby including five into the final pool of articles. The full-text screening of the articles from the additional search tactics was also conducted by TH and SG. The kappa scores were high at 0.81 (95% CI: 0.45 to 1.16) and 0.87 (95% CI: 0.63 to 1.11) for the “references” and “plus one link”

strategies, respectively (Refer to Appendix 10 and 11). Eleven and six studies, respectively, met eligibility criteria.

The final pool of eligible articles was 27.

2.5: 'QUALITY APPRAISAL' VS. 'ASSESSING THE QUALITY OF STUDIES'

Once the final pool of articles was selected, the next step for both the systematic review and the meta-ethnography was to assess their methodological quality (Refer to Table 5). Two reviewers, TH and SG, appraised the quality of the included studies in order to reduce random error and bias. Disagreements were assessed and, if possible, discussed until consensus was reached by the two reviewers.

2.5.1: QUANTITATIVE ARTICLES

Except for King 2008, the other final quantitative articles included decision analytic models; the majority of which were part of economic evaluations. The Equator Network is an international initiative, which aims to improve the methodological quality of health research (Equator Network, 2009). As part of their resource center, they provide a list of recommended reporting guidelines for different types of designs. After examining their recommendations for modeling economic evaluations, the guideline by Nujiten et al. (1998) was deemed acceptable for the purposes of this thesis as it was the only tool whose criteria was designed for decision analytical models. However, instead of simply stating whether each criterion was addressed or not, slight modifications made within this thesis included the addition of 'unclear' and 'non-applicable' as possible answers. While some studies included decision analytic models, they did not necessarily include an economic evaluation. In such scenarios, the reviewers were able to select non-applicable for specific related criteria, such as discounting for instance. Furthermore,

the 'unclear' category enabled the reviewers to assess the quality of the reporting. Refer to Appendix 12 for the modified quality appraisal form.

Since the King 2008 study involves survey and there are currently no established quality appraisal methods for such designs, its quality was not appraised.

2.5.2: QUALITATIVE ARTICLES

In terms of quality assessment, a consensus in the research community has not yet been reached regarding the appropriateness of including such a step for qualitative knowledge syntheses methods (Mays et al, 2000). Given that a conclusion to this debate has not yet been reached, the quality appraisal of qualitative studies was conducted in order to enable a methodological comparison with quantitative quality appraisal.

To this end, the Equator Network also recommended certain tools for the quality appraisal of qualitative studies. After examining the various options, the set of criteria recommended by Tong et al (2007) was selected as suitable for the purposes of the thesis since their criteria were designed for key informant interviews. Once again, the 'unclear' and 'non-applicable' options were added to attain a better grasp of the study's quality (Refer to Appendix 13 for the modified form). However, after the studies underwent this appraisal, the author deemed it as unsatisfactory in regards to the requirements set for this thesis. Specifically, the results did not provide a thorough and detailed analysis of execution, and rather, seemed to target what had been and had not been reported in the studies. As such, another method of quality appraisal was sought.

Dixon-Woods et al (2007) compared three methods of quality appraisal: intuitive judgment of experts, a quality framework (QF) by the National Centre for Social Research, and a

Critical Appraisal Skills Programme (CASP). The experts' intuitive judgment had the highest degree of agreement between the reviewers. This was followed by CASP while the QF rated last. The QF was also judged as being too time-consuming and complex.

While the intuitive judgement approach was favoured, the author and secondary reviewer of this thesis did not feel they had sufficient experience to accurately gauge a qualitative study's quality by judgment alone, and thus, the CASP criteria were also used to assess the quality of the four included qualitative articles (Refer to Appendix 14). Given that Dixon-Woods et al (2007) also discovered that the use of a structured set of criteria biased the reviewers in favour of studies which met qualitative research criteria but failed to provide significant insights into the topic examined, the use of study appraisal data was for informational purposes and not as a means to exclude studies in the final analysis. The two reviewers' answers were not pooled together due to their descriptive nature.

2.6: 'DATA EXTRACTION' VS. 'READING THE STUDIES'

Once the final pool of articles had been retrieved and their quality had been appraised, the next step was to extract the relevant information, which is simply called 'extracting data' for the systematic review. For the meta-ethnography, by returning to the categorizations set by Noblit and Hare (1998), this step is entitled 'reading the studies' and entailed the reviewers carefully examining the studies to attain a thorough understanding of the derived concepts (Refer to Table 5). As such, data extraction forms were created for both the quantitative and qualitative literature (Refer to Appendix 15and 16, respectively). In both cases, the goal was extract a sufficient amount of data to describe the methods and results of the study. The main difference in the forms was, that in contrast to the discrete data extracted from the quantitative studies, more descriptive and narrative information was extracted from qualitative studies. As such, they were

recorded as main concepts relating to uncertainty within the decision-making process regarding the HPV vaccine.

For the quantitative literature, the main focus was on the methods of the decision analytic model, predominantly economic evaluations, as well as the final policy recommendations. Specific to the parameter estimates used within the simulation model, the following measures were extracted: the characteristics of the patient population (age, gender, and number of the cohort), the type of vaccine as well their characteristics (including efficacy, coverage, and duration of protection), the comparator group, the setting, and the horizon, which is the length of time that the model considers.

The following measures were extracted as part of the economic evaluation: the analytical framework, the perspective undertaken, the types of costs included, the currency, and the discounting rates in regards to costs and benefits. The exposure, uncertainty, was extracted in the two different possible ways. The first variable was discrete and accounted for the actual types of uncertainty within each study. The parameter estimates inserted into the model, which caused the greatest variability in the outcomes, were considered as types of uncertainty. These could have included any estimate that the primary authors used within the decision analytic model, such as vaccine efficacy, coverage, and age amongst others. The second variable was continuous and measured as the number of uncertainty types. After the types of uncertainty within each study had been determined, the reviewers then proceeded to count them.

The final policy recommendation was also extracted in both continuous and discrete formats. First, this factor was measured by considering the recommendation for policy as outlined by the primary authors. The reviewers had to determine whether the recommendation

was in favour of implementing an HPV vaccination program, against it, or neither. However, it is important to note that due to the scope of this thesis, data to assess whether the policy was actually put into practice was unavailable. In the second method, which is unique to this study, the reviewers were asked to rate their perception of the study authors' confidence with the final policy recommendations. This was measured using a 7-point likert scale where they were asked whether they agreed with the following statement: 'The researchers were confident with the final recommendation". On the scale, one equated to 'highly disagree' while seven equated to 'highly agree'. This variable was named "confidence rating".

For the quantitative literature, four studies derived from the original search strategy underwent pilot-testing by the author; TH. The modifications were minor and the final form can be found in Appendix 17. The two reviewers, then, used the revised data form to extract the relevant quantitative data. Any disagreements were discussed until consensus was reached. The only exception where consensus was not sought was the reviewers' perceptions of the primary authors' confidence with the final policy recommendation; here, the mean of the two reviewers' perception scores was calculated. Due to the small number of qualitative articles, formal pilot testing was not implemented; the form was slightly modified by the author as she extracted the data (Refer to Appendix 18). The secondary reviewer used the modified form and any disagreements were, once again, solved by consensus.

Since the King 2008 study was not an economic evaluation, it was examined separately. Data extracted included the method of data collection, number of member states participating, the reasoning behind successful HPV vaccine implementation, differences between countries who did and did not introduce the vaccine, and lastly, reasoning for not undertaking any economic evaluations.

2.7: Data Analysis and Beyond

2.7.1: Quantitative Articles

As for the systematic review, the other two steps, 'analyzing and presenting results' and 'interpreting the results', were conducted by the author alone (Refer to Table 5). Microsoft Excel 2010 was used to create a database for organizational purposes while IBM SPSS Statistics 19 was used to conduct the analysis. Descriptive statistics and frequency statistics were calculated and used to summarize the data elements, which were extracted. Frequencies were calculated for all the discrete elements, including the gender and number of the simulation cohort, the type of HPV vaccine as well as its duration of protection, the comparator intervention, the setting, the horizon of the simulation, the analytical framework of the economic evaluations as well as the perspective taken, and lastly, the types of costs included with their respective currencies. Continuous variables were analyzed by using mode, median, mean, and range. These included the age of the simulation cohort, efficacy of vaccine, and coverage of the vaccine. The types of uncertainty present in studies were summarized using discrete variable metrics (presence/absence) and overall continuous variable metrics (mode, median, mean, and range measures). Similarly, final recommendations were represented as using discrete metrics (in favour of policy implementation/against policy implementation/neither in favour or against) and confidence in the final recommendations represented by descriptive statistics.

To determine whether the final recommendations regarding policy implementation (in favour/against/neither in favour nor against) were influenced by the presence or absence of uncertainty, a series of chi-square analyses were conducted; one analysis for each type of uncertainty identified. Pearson correlations were calculated to determine if there was a link

between amount of uncertainty and perceived confidence in decisions favouring funding HPV vaccine.

2.7.2: QUALITATIVE ARTICLES

Standard analytical methods for meta-ethnography were used to analyze the qualitative studies. This entails ascertaining the 1st, 2nd, and 3rd order constructs (Aikens et al 2008). Within the primary qualitative studies, the 1st order construct consists of the participants' actual responses and quotations; 1st order constructs come directly from the raw data of the primary studies. Informed by these data, the authors of the primary studies are, then, able to develop the 2nd order constructs. These basically consist of the primary authors' interpretations' of the participants' quotations. It is these concepts that were independently extracted by each reviewer. Thus, the data extracted for this study reflect 2nd order constructs. The constructs were compared between the two reviewers and debated until consensus was reached. This involved not only consensus on the concepts themselves but also on their labelling.

To achieve this goal, the analysis began by organizing the 2nd order constructs in table format to illustrate the different representation of each concept across the studies. Afterwards, the steps 'determining how studies are related' and 'translating studies into one another' were undertaken by the author alone. By using the primary authors' interpretation of the participants' responses, new overlying concepts were developed. This was achieved through reciprocal translation, which entailed comparing and contrasting the concepts found within studies against each other through an iterative staged approach with the goal of refining common themes and ensuring all relevant concepts were incorporated. In this study, publication date was used as the factor (starting with the earliest publication) to determine the order by which each new study was considered. As such, the concepts of the earliest study were compared and matched to those of

the next publication, which were, then, compared and matched to the study that followed. This process was repeated until all the studies were included. The newly derived concepts were the 3rd order constructs, which consisted of the reviewer's interpretations of the primary authors' interpretations. Afterwards, these 3rd order construct were brought together in a line of argument, which specific to this context is an overview of uncertainty in the decision-making process of policy-makers in regards to the implementation of the HPV vaccine.

CHAPTER 3: RESULTS

3.1: LITERATURE SEARCH RESULTS

The final pool of articles included five from the original search strategy, five from the qualitative search strategy, 11 from the references search strategy, and six from the "plus one link" search strategy, resulting in a total of 27 eligible publications; 17 quantitative and 10 qualitative (Refer to Table 9). Of the ten qualitative articles, seven, 01A-01G in Table 9, were multiple publications from the same international project. Different publications displayed the results from different countries' perspectives. As such, only the publication, which addressed the uncertainty regarding the HPV vaccine from the perspective of policy-makers from all of the countries, was included: 01G in Table 9. Therefore, the data from 17 publications of quantitative studies and four publications of qualitative studies were extracted, analyzed and presented here.

3.2: QUANTITATIVE STUDIES

Seventeen quantitative studies met the required eligibility criteria and were included in this analysis. Sixteen were analytic decision models and the 17th, King 2008, was a cross-sectional survey.

3.2.1: DECISION ANALYTIC MODEL STUDIES

Decision-makers require information regarding the epidemiological impact of new interventions and their cost-effectiveness ratios prior to their implementation. As such, decision analytic models have become an integral aspect of health technology assessments (Consensus Conference on Guidelines on Economic Modelling in Health Technology Assessment, 2000). They consist of mathematical frameworks, which integrate specific vital variables, known as

parameters, to determine how the outcomes of interest would be affected. These frameworks mainly involve running a hypothetical cohort of individuals through a simulation model, such as decision-trees or Markov health states, in order to accurately imitate real life events and predict future outcomes. In this review, 16 of the 17 eligible quantitative papers were decision analytic modelling studies.

3.2.1.1: Study Description

On many dimensions, the sixteen analytic decision modelling studies were quite similar even though the parameters were selected specific to the study's unique setting (Refer to Table 10). Five clusters of study descriptions are detailed below: study participant and context, HPV vaccine, analytics, uncertainty, and outcomes.

3.2.1.1.1: Study Participant and Context -Descriptions and Parameters:

Twelve of these studies, 75%, focused only on vaccines for females while the other four, 25%, compared female only vaccination programs to ones that included males as well (Refer to Table 11). The age of vaccination of the model cohort ranged from 10 to 16, with a mean, median, and mode of 12 (Refer to Table 12). The number of individuals within the cohort was not specified for the majority of the models but when specified, it was usually 100,000 (Refer to Table 13). Though the comparator group typically consisted of conventional cytology, one model compared the vaccine to no program while another compared it to both conventional and liquid-based cytology (Refer to Table 14). All the studies were conducted for the developed world, except for one, which examined the impact of the HPV vaccine in 72 GAVI Alliance and 33 Latin American/Caribbean countries (Refer to Table 15). The GAVI alliance is a private-public partnership whose mission is to increase access to vaccines in poor countries (GAVI Alliance, 2011). As two studies (Rogoza 2008 and Suarez 2008) contained five different

analyses each (Refer to Table 10), the total number of settings was 24. The United States was the most featured being selected in 25% of the analyses, followed by Finland with 12.5%. Less variability existed in the time horizon selected for the model, with 68.8% of studies selecting the life-long option (Refer to Table 16).

3.2.1.1.2: HPV Vaccine – Descriptions and Parameters:

In addition to the type of HPV vaccine, the parameters concerning the vaccine also included its efficacy, coverage, and duration of protection. The HPV strains targeted varied across the studies: eight studies selected HPV 16 and 18; three studies selected HPV 6, 11, 16, and 19; three studies selected only HPV 16; one study compared the bivalent vaccine to the quadrivalent vaccine; and one study selected 59% of HPV strains that cause infection (Refer to Table 17). The range of vaccine efficacy was from 69% to 100% (Refer to Table 18). Multiple modes existed at 90%, 95%, and 100% with four studies using each value. The mean and median efficacy rates were 90% and 89%, respectively. Regarding the vaccine's coverage, while nine studies selected ideal scenarios where 100% of the targeted population were estimated as receiving the vaccine, others based their values on existing coverage rates of similar vaccines B (Refer to Table 19). As such, the range varied from 70% to 100%, while the median and mode were 100% and 89.6%, respectively. Lastly, the duration of protection varied across studies ranging from 5 years (one study) to 10 years (four studies), to life-long immunity (11 studies) (Refer to Table 20).

3.2.1.1.3: Analytics – Descriptions and Parameters:

Of these 16 decision analytic models, 11 included economic evaluations (Refer to Table 21), where three conducted a cost-effectiveness analysis only, four conducted a cost-utility analysis only, and the remaining four conducted both types of analyses (Refer to Table 22). The

analysis was conducted from the point of view of the health care system in 78.9% of the cases (Refer to Table 23). The main exceptions existed when the setting was either the Netherlands or the United States, in which case it was from a societal perspective.

The types of costs included were specific to the point of view taken. While studies, which were from the health care systems' point of view, included direct costs, those from the societal perspective also included indirect costs (Refer to Table 21). Specifically, 57.9% of the studies included only direct medical costs, 21.1% included both direct medical and non-medical costs, while 21.1% included all direct and indirect costs (Refer to Table 24). The currency selected was specific to the setting of the study (Refer to Table 25 for specific frequency details) while discounting was fairly consistent among the studies, with a mode and median of 3% for both the costs and the benefits (Refer to Table 26A). The ranges of the costs' and benefits' discounting rates were 1-4% and 1-3.5%, respectively. Specific frequency details can be assessed in Tables 26B and 26C.

3.2.1.1.4: Uncertainty – Descriptions and Parameters:

Uncertainty was regarded as any estimate, which caused great variation in the outcome, whether it was the number of cervical cancer cases prevented, life years saved, Incremental Cost-Effectiveness Ratios (ICER), etc. Several types of uncertainty were identified by the reviewers and varied between studies (Refer to Table 27). The potential for the vaccine's immunity to potentially wane over time introduces a high degree of uncertainty, as featured in 13 studies (Refer to Table 28). Other types of uncertainties included the vaccine's cost (seven studies), coverage rates (five studies), age of vaccination (four studies), the vaccine's efficacy (three studies), and lastly, cross protection (two studies). As for the number of uncertainties, the range

was one to four while the mean, median, and mode (eight studies) were all two (Refer to Table 29).

3.2.1.1.5: Outcomes - Descriptions

Two outcome measures were considered in the thesis. First, the final recommendation articulated by the primary authors. None of the final recommendations were against the implementation of the vaccine, eleven studies were in favour of an HPV vaccine policy, and five were neither pro or against (Refer to Tables 30 and 31). Second, the mean, median and mode of confidence rating by the reviewers were 6.3, 7.0, and 7.0, respectively, while the range was 4.5 to 7.0 (Refer to Table 32). There were no differences in ratings as a function of final recommendations by primary authors.

3.2.1.2: Completeness of Reporting and Quality Appraisal

Recall, the tools available to assess decision analytic model studies focus on the completeness of reporting. A tool to assess the quality of execution of each step (more aligned with a traditional quality appraisal) does not exist for this type of study design. Using the Nujiten (1998) tool, a high degree of agreement existed for certain criteria across studies while others demonstrated great variability (Refer to Table 33). For instance, the reviewers agreed on the 'objectives', 'analytical framework', 'patient population', 'final results', 'conclusion', and 'quality control' criteria of all the studies. Alternatively, greater disagreement was found with criteria 'economic impact' (88% of the studies), 'hypothesis' (94% of the studies), 'clinical measures' (81% of the studies), 'data analysis' (81% of the studies), and 'intermediate results' (88% of the studies). Refer to Appendix 20 for the agreement/disagreement classifications by study.

The agreement of the reviewers was measured by comparing their answers, which included either 'covered', 'not covered', 'unclear', or 'non-applicable', for each criterion. The criteria under the 'design', 'methods', and 'results' sections were typically covered while those from the 'introduction' and 'validation and quality control' sections were not (Refer to Table 34). Within the 'introduction' section, whereas 88% of the studies clearly covered the epidemiology of cervical cancer, 69% lacked an examination of the current treatments. Though all the studies included information regarding the vaccine, 19% did not do so in a clear manner. While 94% of the studies did not discuss their hypotheses regarding the results, all the studies stated their objectives. With the exception of 'clinical' measure, all the criteria from the 'design' section were complete. Similarly, with the exception of 'intermediate results' where an overwhelming 81% of the studies did not cover this criteria, overall the 'methods' and 'results' sections were complete . Lastly, inconsistency in completeness of reporting was found for the 'validation and quality control' section. Refer to Appendix 21 for the responses classified by study.

3.2.1.3: Determining the Impact of Uncertainty

As seen in Table 35, there does not seem to be a clear or consistent pattern showing that the presence of uncertainty leads to a particular type of policy recommendation being made. For some types of uncertainty, cost of vaccination and duration of protection, decisions in favour of implementation were more common.

The series of chi-square analyses failed to find evidence association between policy decisions (in favour of implementation/neither in favour nor against implementation) and the presence or absence of uncertainty. This held true for each of the specific types of uncertainty considered (see Appendix 19).

Finally, no correlation was found between number of types of uncertainty and perceived confidence ratings in the policy decisions favouring HPV vaccine emerged ($r=0.53$, $p>0.05$).

3.2.2: KING 2008 STUDY

3.2.2.1: Study Description

The Vaccine European New Integrated Collaboration Effort (VENICE) has been developed among the European Union (EU) member states with the ideal goal of developing a collaborative vaccination network. Both Gardasil and Cervarix became licensed in the EU in September 2006 and September 2007 respectively. As such, all the EU member states were debating the implementation of the HPV vaccine. Web-based surveys were administered to national gate keepers of 28 countries and completed in 2007 with the aim to document any sources of data used and any factors that affected the decision-making process of these nations as related to the implementation of the HPV vaccine.

3.2.2.2: Completeness of Reporting and Quality Appraisal

As stated within the methodology section, quality appraisal was not conducted upon this study due to a lack of established standards for its design.

3.2.2.3: Study Outcomes

The seven countries, which had decided to introduce the vaccine, stated that their decision was swayed by favourable cost-effectiveness ratios, estimated epidemiological impact on pre-cancer and cancer lesions, as well as social demand. Furthermore, countries that introduced the vaccine compared to those which did not had a larger population, a higher national GDP, and a lower mean coverage rate of the measles containing vaccine's first dose (all statistically significant). The availability of different types of epidemiological data for the

decision-making process did not seem to influence the implementation of the vaccine. While fourteen of the countries did not undertake any economic evaluations for various reasons such as insufficient data, or lack of available financial resources and expertise, three countries indicated that economic evaluation data were not a regular component of the decision-making process. However, in fourteen of the countries surveyed, at least one ad hoc study (including disease burden studies, mathematical modelling studies, and/or economic assessments) was conducted in order to aid the policy-makers.

3.3: Qualitative Studies

3.3.1: Study Description

The four qualitative studies focused upon the decision-making process from the policy-makers perspective (Refer to Table 36). The geographical setting of the studies varied greatly, coming from both the developed and developing world. While the Colgrove 2010 study was conducted in the United States, the Harries 2009 study was conducted in South Africa, the Pineros 2010 study in Colombia, and lastly, the Tsui 2009 study in India, Peru, Uganda, as well as Vietnam. The time period for data collection was similar across the studies ranging from 2006 to 2008. As the vaccine was approved for use by 2006 in most developed countries, this time period was ideal for analysing the uncertainties that policy-makers were faced with. The participants represented a broad group of individuals involved within this decision-making process, including legislators, public health officials, and academics among others (Refer to Table 37).While all the studies employed purposive sampling in order to reach their target participants, Colgrove 2010 and Harries 2009 also used the snow-ball sampling methodology. This resulted in sample sizes of 14, 26, 73, and 237 for the Pineros 2010, Harries 2009, Colgrove 2010, and Tsui 2009 studies, respectively.

In regards to data collection methods, the four studies included in-depth, face-to-face, individual interviews. Some variations existed between the studies. The Colgrove 2010 study conducted some interviews in group settings or by telephone and also reviewed additional documentary materials, such as legislative testimonies for instance. In addition to the interviews, the Tsui 2009 study also conducted desk reviews, which the authors defined as "careful assessment of existing government policy and technical documents related to national health statistics, school attendance reports, national policy guidelines for cervical cancer, and/or new vaccine introduction". Though the data analysis of all four studies was conducted by content analysis, slight variations existed between the studies. The authors of the Colgrove 2010 study, and the Harries 2009 study used an inductive approach, whereby the themes emerged from the data, the authors of the Pineros 2010 study and the Tsui 2009 study used pre-established themes in addition to the emerging ones.

3.3.2: Completeness of Reporting and Quality Appraisal

Similar to the quantitative study, a modified version of the reporting guideline by Tong et al (2007) was used to assess the completeness of reporting. However, the 'non-applicable' response did not apply to the qualitative studies. Across each section, reviewers' agreement regarding the completeness of reporting of different criteria varied (Refer to Table 38). For the 'reporting' domain, all of its criteria, including 'quotations presented', 'data and findings consistent', 'clarity of major themes', and 'clarity of minor themes', attained 100% agreement between the two reviewers (Refer to Appendix 22). This section was also the only one, where all the criteria were actually covered by the primary authors (Refer to Table 39). In contrast, none of the criteria pertaining to 'reflexivity' were reported. As for the other sections, the answers varied and were specific to each criterion (Refer to Appendix 23).

The Critical Appraisal Skills Programme (2010) was also used to appraise the quality of the qualitative studies. The two screening questions, which focus on a clear statement of objectives and appropriate use of qualitative methodology, were answered as yes by both reviewers for all four studies (Refer to Appendices 24). Overall, the studies were of poor to moderate quality.

Specifically and first, with the exception of the Tsui 2009 study, none of the other studies provided a thorough justification of their rationale for selecting their specific methodology. In contrast to the other three studies, a justification for recruitment strategy in the Harris 2009 study was not provided. While three studies (Colgrove 2010, Harries 2009, and Pineros 2010) provided details regarding the interview process, which were methodologically coherent with study objectives, only the authors of the Pineros 2010 study actually conducted triangulation to assure the credibility of the data. None of the studies mentioned data justification nor did they provide justification for the selected approaches.

Inherent researcher bias may be unavoidable due to the subjective nature of qualitative research. As such, this is typically addressed by a clear discussion of any previous significant partiality as well as the relationship between the interviewer and interviewee. The fourth detailed question dealt with such a relationship, and surprisingly, none of the authors discussed this aspect of reflexivity within their respective studies. However, all the studies did consider ethical issues, which was the focus of the fifth detailed question. Matters of approval by institutional reviews boards, informed consent, and confidentiality were all addressed. The following CASP question was whether the data analysis was sufficiently rigorous. With the exception of Harries 2009, all the studies provided discussions of the analytic procedure undertaken. However, different studies focused upon different aspects. Within the Pineros 2010 study, while sufficient

data was presented to support the findings, contradictory points were not discussed. Meanwhile, the Tsui 2009 study did not provide any supporting data for their final arguments. In regards to reflexivity, none of the studies, once again, critically examined their own role, bias, and influence within the analysis. For the last two questions, which revolved around a clear statement of findings and the value of the research, the answers were affirmative for all the studies. The specific details can be assessed in Appendices 23A-23D.

3.3.4: Meta-ethnography Analysis: Identifying Types of Uncertainty

As described in the methods section, the analytical framework of meta-ethnography involves the following steps: identification of 2nd order constructs from the primary studies, development of 3rd constructs, and reciprocal translation 3rd order constructs into a line of argument.

Table 40 outlines the specific types of uncertainty derived independently from the reviewers (first two columns) and the 2nd constructs that were reached by consensus. As can be seen, there were at least four types of uncertainty identified in each study. Some examples include uncertainty regarding the vaccine's cost, uncertainty regarding public acceptance due to the vaccine targeting a sexually transmitted infection, as well as uncertainty regarding the health care system's ability to implement and monitor the vaccine. Although some of specific labels extracted by the independent reviewers were unique, both reviewers extracted the same concepts in most cases; only on a few occasions was one concept identified by a single reviewer. Furthermore, it was a straight forward process of choosing a label for the final agreed upon concept.

The next step of the meta-ethnography involved the development of the 3rd order constructs through reciprocal translation (Refer to Table 41). Comparing the concepts from Tsui

2009 to those of Harries 2009 resulted in the derivation of five concepts: uncertainty regarding public acceptance of the vaccine, uncertainty regarding the manufacturer's intentions and motives, uncertainty regarding the vaccine's characteristics, uncertainty regarding the cost of the vaccine, as well as uncertainty regarding the vaccine's method of delivery. Four of the five were common to both studies and the fifth, manufacturer's role, was only present in Harries 2009. Afterwards, these five concepts were compared to the 2nd order constructs emerging from Pineros 2010 (published in May). A unique 2nd order construct, uncertainty regarding the potential development of 'inequity as a consequence of cost', was identified in this study. This enabled the creation of a new 3rd construct, 'uncertainty regarding the system's ability to support the vaccine', which incorporated both cost and method of delivery. Lastly, these 3rd order constructs, 'uncertainty regarding public acceptance of the vaccine', 'uncertainty regarding the manufacturer's intentions and motives', 'uncertainty regarding the vaccine's characteristics', and 'uncertainty regarding the system's ability to support the vaccine' were compared to those from Colgrove 2010 (published in August). All the 2nd order constructs from Colgrove 2010 fit into these 3rd order constructs. For instance, 'uncertainty regarding the vaccine's long-term safety' was categorized under 'uncertainty regarding the vaccine characteristics', 'uncertainty regarding public acceptance due to the vaccine targeting a STI' under 'uncertainty regarding public acceptance of the vaccine', 'uncertainty regarding manufacturer's role' with 'uncertainty regarding the manufacturer's intentions and motives', and lastly 'uncertainty regarding the cost' under 'uncertainty regarding the system's ability to support the vaccine'..

Overall, the analysis resulted in four 3rd order constructs reflecting types of uncertainty, as defined below:

Uncertainty regarding Public Acceptance of the Vaccine: This form of uncertainty arises due to different viewpoints within the public regarding the vaccine. For instance, while some individuals within the community may put greater emphasis on the vaccine's ability to prevent cervical cancer and therefore, approve of a HPV vaccination program, others may fear that such a vaccine may lead to increased sexual activity. As such, policy-makers may be uncertain regarding whether their specific constituent would support a vaccination program and, moreover, if there is great variability among their constituents, with which perspective to align. Thus, although they may be certain that differences in acceptance may exist, the management of such differences remains uncertain along with how policy-makers predict the specifics of their jurisdictions.

Uncertainty regarding the Manufacturer's Intentions and Motives: While the specifics differed across different regions of the world, the manufacturers' presence within the policy-making process introduced uncertainty since their intentions and motives are not clear. For example in United States, several bills, which were pro-implementation, were introduced by Women in Government; a national organization of female legislators who were being funded by Merck, the manufacturer of Gardasil (Colgrove et al, 2010). When the media focused on the manufacturer's role within the policy-making process, suspicions were raised that the bills were actually an attempt to make money rather than an effort to maintain public health.

Uncertainty regarding the Vaccine's Characteristics: This construct includes uncertainty resulting from any factor that is specific to the function of the vaccine, such as efficacy, duration of protection, types of HPV strains targeted, etc. For instance, the uncertainty associated with the long-term safety of the vaccine, specifically the potential for the development of infertility, were a major concern for the policy-makers interviewed in the Tsui 2009 study. While the

certainty regarding some factors is more robust, such as the HPV strains the vaccine targets, others, including duration of protection and long-term safety, require further study and longer follow-up times of females who have received the vaccine. Thus, policy-makers are left to make decisions in an environment where the trajectory and long-term impacts of these decisions on the health of their constituents is unknown.

Uncertainty regarding the System's Ability to Support the Vaccine: Lastly, the concept relates to the uncertainty about whether the current health care system has sufficient financial and human resources to successfully implement, monitor, and operate a vaccination program. This may include uncertainty regarding resources required to manage situations that are somewhat predictable and known, such as coverage of original vaccine and age interval, and situations that are less predictable, such as the potential need for boosters should duration of coverage be suboptimal, introduction of population-based vaccine programs for boys, and so on. Once policy-makers have resolved such situations, uncertainty also exists in regards to the practicability of the vaccine's method of delivery.

The last step of the meta-ethnography was 'synthesizing translations', which involved the development of a line of argument from these final 3rd order constructs. Figure 6 displays how all four of these concepts affected the policy-making process concerning the implementation of the HPV vaccine. The loop represents the uncertainty that surrounds the decision-making process, with each type specified on said loop. To ensure that policy decisions are conducted in a manner that optimizes the use of evidence, the different types of uncertainty can only be considered after they have been identified. As such, policy-makers must examine their specific setting and determine whether there is any uncertainty arising from the types identified in this thesis. As such, the following are examples of questions, which can be posed:

Uncertainty regarding Public Acceptance of the Vaccine

- Is the general public in favour of implementing the HPV vaccine?
- Are there any specific social concerns that need to be addressed?
- If there is variability in support, how should it be managed?
- What is the risk of moving forward on policy formation if information regarding public perspectives is absent or incomplete?

Uncertainty regarding the Manufacturer's Intentions and Motives

- What role is the manufacturer playing within the decision-making process? For instance, are they hiring local political consultants? Are they funding specific organizations?
- What are the intentions of the manufacturers?
- What is their role in marketing the vaccine? Is there a biased representation?
- Is there sufficient information to fully understand the manufacturer's role? How to manage when these data are less clear?

Uncertainty regarding the Vaccine's Characteristics

- What is the current evidence regarding the vaccine's efficacy and long-term safety?
- How long will the immunity of the HPV vaccine last?
- How should gaps in knowledge be managed in a policy context?

Uncertainty regarding the System's Ability to Support the Vaccine

- Does the system have sufficient resources to both finance and deliver the vaccine?
- Would the resources be better spent on another intervention?

- Would the system be capable of monitoring the vaccine and any related consequences?
- Would the system be able of operating a long-term vaccination program?

In addition to a line of argument specific to HPV vaccine, these data can be used to propose a second line of argument, using a conceptually similar loop, to more generically represent the role of uncertainty in decision-making by policy-makers (Refer to Figure 7). This loop of uncertainty includes uncertainty introduced by the intervention, uncertainty introduced due to public opinion, uncertainty regarding the intentions of interest groups, as well as uncertainty concerning the system's capabilities.

Specifically, the policy-makers would have to navigate through the uncertainty introduced by the intervention itself, which is a broader classification of the 'uncertainty regarding the vaccine's characteristics' from the HPV vaccine context. This could include any aspect about the proposed intervention including its efficacy, safety, dose, age, and so on. Any uncertainty regarding the cost would fall under the 'uncertainty regarding the system's capabilities', whose match is 'uncertainty regarding the system's ability to support the vaccine' under the HPV vaccine context. In addition to cost, other issues related to access and system support for implementation would be relevant. Is there appropriate production and supply of the product? How to ensure adequate clinical support to ensure the intervention or technology can be safely implemented? Does the system have sufficient informatics support to monitor long term effects of implementation? How would the safety thresholds be set?

The other two forms of uncertainty arise from third parties. Specifically, 'uncertainty regarding the manufacturer's intentions and motives' from the HPV vaccine context has been

broadened to include all 'uncertainty regarding the intentions of interest groups'. This was conducted to ensure that uncertainty arising from all interest groups was accounted. For instance, medical organizations, amongst others, may also become involved within the decision-making process. As such, policy-makers may not only ask themselves what role such an interest group would be playing within the process and what their intentions are but also how to manage their contribution and involvement. Lastly, the last type of uncertainty specific to the HPV vaccine, 'uncertainty regarding public acceptance of the vaccine', has been broadened to include all 'uncertainty regarding public opinion' since 'public opinion' incorporates more than just acceptance. For instance, an event throughout the decision-making period could potentially greatly influence the public's opinion. Such events could include specific cases of adverse reactions against the proposed intervention being highlighted in the media (Boyle, 2009). As such, the policy-makers may ask themselves what differing social concerns exist and how they should be managed.

3.4: Comparative Analysis of Quantitative vs. Qualitative Studies

3.4.1: Methodological Perspective

The primary objective of this thesis was to not only implement both a systematic review and meta-ethnography but to also compare and contrast the steps involved within each methodology. As such, each step from Table 5 will be briefly analyzed, specifically in terms of any similarities and differences between the two knowledge synthesis methods.

The very first step was 'formulating a review question' for the systematic review and 'getting started' for the meta-ethnography. Though both required a research question to be derived, the type of question asked greatly varied between the two methods. The systematic

review methodology lent itself well to answering the question of impact, specifically whether uncertainty had an impact on outcomes, and magnitude of impact. In contrast, the meta-ethnography was able to answer questions regarding the 'what', 'why' and 'how', specifically how the policy decisions were made and what matters influenced them.

The second step revolved around the development of the eligibility criteria, specifically 'defining inclusion and exclusion criteria' for the systematic review and 'defining the focus' for the meta-ethnography. In this study, some of the same criteria were used for both knowledge syntheses methods. These included disease context, language, date, and setting. However, a major difference was that specific and measurable outcomes could only be identified *a priori* for the quantitative studies. In this case, was there support for or against the HPV vaccine policy? The answer options were known and identified *a priori* – yes, no, and neither – the goal was to assess the frequency or magnitude of each option. In contrast, the intent of analyzing qualitative studies was to answer to a different type of question. In this case, the researchers seek a particular 'why' or 'how' answer. Thus, no answer options are articulated before the inquiry, rather, the answers emerge as a result of the inquiry. These differences are reflective of the larger paradigmatic perspectives from quantitative and qualitative methodologies. Moreover, while the number of qualitative studies was fewer, the investment of time to be able to answer the core questions was significantly greater. Analysis of themes, compared to counts in favour and against an action, was more intellectually challenging.

Once these criteria were established, the next step involved 'locating studies' and 'locating relevant studies' for the systematic review and meta-ethnography, respectively. While there were some similar challenges with both methodologies, trying to find relevant qualitative studies was particularly difficult. Unlike some already established databases as well as MeSH

term and keyword systems that exist to support searches of quantitative literature (DeLuca et al, 2008), qualitative literature greatly varies in the way that their defining features and information are catalogued and searched. The original effort, which set some very broad parameters to more readily capture the studies of interest ('HPV vaccine', 'policy-maker decision', and 'uncertainty'), yielded only one of the ultimate four qualitative studies found to be eligible. In response, another search strategy replaced the 'uncertainty' concept with 'qualitative design'. This was followed by an additional five different tactics to increase the strategy's sensitivity (Figure 2). In all, 45 different searches were executed to find the qualitative studies (nine databases X five searches) compared to the nine searches, which were used to target the quantitative studies. Even with such a highly intensive search strategy, not all the relevant articles were retrieved. Indeed, the qualitative study by Harries 2010 was attained through hand searching the references of the final articles from the original search strategy.

The time and effort required to target and extract these eligible studies indicate that new innovative methods in library and information sciences are required. Methods that better enable the researchers to efficiently find qualitative studies would greatly benefit the scientific community. Considerable work has been completed in the quantitative arena to help researchers find RCTs, cohort studies, clinical practice guidelines and the like (McKibbon& Wilczynski, 2009). One might rationalize that the same methodological principles could be used to identify the ideal or preferred strategy for qualitative studies.

While the search strategies were significantly different, the next step, which involved selecting studies, was very similar between the two. Three levels of screening were conducted: title, abstract, and full-text. Full-text screening was conducted through the use of forms, which, were based on their respective inclusion and exclusion criteria. The difference, which existed in

the type of questions asked on the eligibility forms, was mainly due to the different purposes of the two knowledge synthesis methods. While the systematic review examined the impact of uncertainty as a predictor of decisions, the meta-ethnography aimed to determine the different types of uncertainty.

In this thesis, for both quantitative and qualitative articles, reporting guidelines recommended by the Equator Network were used. One of the challenges with the tools and with the field of critical appraisal in general is the differentiation between completeness of reporting (whether particular steps were executed and reported) from the quality of a study (whether the steps were executed according to methodological norms and standards). Different tools target different goals. In addition to a reporting tool, the CASP tool was also used for the qualitative literature since their quality could not be properly determined with the reporting tool. However, even with the new set of questions, the quality could not be properly assessed due to poor reporting, particularly the methodological detail. This is an important consideration. Complete reporting in studies is required for a comprehensive analysis of its quality to occur; perfectly well conducted studies and important studies may emerge as poor quality because insufficient detail is provided to the reader.

The reporting guidelines for the quantitative studies also demonstrated a lack of complete reporting in regards to certain criteria, thereby also disabling a proper assessment of their methodological quality. However, failure to conduct a full quality appraisal is further hampered by an absence of a standardized valid quality appraisal tool or specific criteria for application to decision analytic models and economic evaluations studies. Though the Equator Network offered a variety of options, these tools have not under gone the same level of rigour in their development as the Cochrane Collaboration's quality appraisal tool for RCTs for instance.

In order to advance this field methodologically, tools that can assess both completeness of reporting and quality of execution may be useful. While a study may have been conducted with methodological rigour, a lack of reporting may lead its level of quality to be classified the same as a poorly conducted study. Consequently, the results of said study might be not considered as valuable by other researchers or policy-makers, thereby impeding scientific and societal progress. This rationalization applies to both the qualitative and quantitative studies included in this thesis.

As for the data extraction forms, the major difference between the two knowledge synthesis methods was the manner in which the data was recorded. The methodology section of the quantitative form was divided into distinct questions that lent themselves to specific answer phenotypes, the details of which could be easily extracted from the studies and entered into the appropriate place. Meanwhile, the qualitative form lent itself to a more descriptive and narrative approach to answering these questions. For instance, for the qualitative articles, reviewers were asked to describe the data collection process in a detailed manner and to provide supporting evidence to these points, without any emphasis on a specific aspect of the process. In contrast, the data collection process for the decision analytic models was separated into different questions, ranging from the number of individuals in the simulation cohort to the discounting rates used. In other words, the answers consisted of very specific types of data, such as numerical and categorical, which were easily converted to table format.

This example emphasizes the difference in the rigidity of these two methodological streams. While quantitative studies, specifically decision analytic models, are conducted with a certain degree of uniformity, the specific details of the qualitative studies' methodology can greatly vary. Whereas the reviewers only answered one open-ended descriptive question for the

meta-ethnography, multiple questions adapted to each aspect of PICO/PECO were answered for the systematic review. Once again, this entails the rigidity and flexibility of quantitative and qualitative literature, respectively. Neither should be considered as better than the other since each methodology adapts to the type of information being retrieved.

The major difference between the two approaches was in the analysis of the results, as described in detail in the Methods section. While the types of uncertainty were derived by merging the concepts from the qualitative studies using reciprocal translation, the data from the quantitative literature underwent four different statistical procedures to determine the impact of uncertainty on the final decision. Regardless of the analysis used, each type of knowledge synthesis method provided relevant data in regards to the HPV vaccine; simply from different perspectives.

3.4.2: Analysis, Results and Outcomes Perspective

The primary objective of this thesis was to not only compare and contrast these two methodologies but to also compare their roles and outcomes as pertaining to knowledge synthesis. In the context of uncertainty within the policy-making process regarding the implementation of the HPV vaccine, the two knowledge synthesis strategies examined the dilemma from different perspectives. While the systematic review aimed to determine the impact of uncertainty on the final decision, the meta-ethnography aimed to discover the types of uncertainty that existed within the process.

Specific to the HPV vaccine, the different types of uncertainty within the decision-making process were determined as ‘vaccine’s characteristics’, ‘manufacturer’s role’, ‘system

feasibility', and lastly, 'public's acceptability'. Therefore, the meta-ethnography was able to successfully complete its *a priori* set objective.

As for the systematic review, there were not any primary quantitative studies which directly examined the impact of uncertainty on the final policy decision. The eligible studies included decision analytic models, whose outcomes included both cost-effective ratios and anticipated epidemiological influence. Uncertainty was represented as a parameter in the model: if changing the values of a specific parameter caused great variation in the final outcome, said parameter was considered as a type of uncertainty. The identified types of uncertainty parameters included duration of protection, cross protection, coverage rates, age of vaccination, as well as the vaccine's efficacy and cost. Using the rubric from the qualitative studies, these types of uncertainties fall within two of the four available types that emerged from the qualitative synthesis: 'vaccine characteristics' or 'system feasibility'. The additional two other types of uncertainty identified by the meta-ethnography, which are 'manufacturer's role' and 'public's acceptability', were not even incorporated within the decision analytic models. While the included types of uncertainties did not in any way impact the primary researchers' final recommendation, the impact of 'public acceptability' and 'manufacturer's role' could not even be assessed.

The fact that the presence of uncertainty, or the amount of uncertainty, did not appear to impact the final recommendation of the decision analytic models is very important. In the King 2008 study, seven countries that had implemented the HPV vaccine were asked to rate different variables from one to five, where one equalled 'not considered in taking the decision' and five equalled 'main driver of decision'. Favourable cost-effective ratios and anticipated epidemiological impact both received a mean of four on said scale. As such, while policy-makers

may confidently decide in favour of implementing the HPV vaccine based on the current evidence, significant sources of uncertainty, which may have potentially impacted the final recommendation, may have not even been assessed.

The existence of such a conundrum demonstrates the gap that exists between those who disseminate quantitative knowledge and those who put it in practice. While policy-makers must navigate through different types of uncertainties as demonstrated by the results of the meta-ethnography, the quantitative research enterprise may not be addressing all said types. Perhaps the reason uncertainty had little impact on final recommendations by authors is because the types of uncertainty considered in the models were not the right ones. Alternatively, though the qualitative research enterprise identified several types of uncertainty, their impact to actual decision-making may prove to be quite limited.

To untangle this, a continuous loop between the policy-makers and knowledge derived from both qualitative and quantitative tactics should be maintained in order to optimize the application of the knowledge available (Refer to Figure 8). The questions that policy-makers may pose could potentially be answered through either quantitative or qualitative literature. Each form of research could successfully fulfill such a requirement, though through different tactics. For instance, in lieu of uncertainty regarding the public's acceptance of the HPV vaccine, qualitative researchers could potentially conduct focus group interviews to determine the public's views while quantitative researchers may simply conduct opinion polls to determine the percentage associated with divided view points within the population. However, as demonstrated in Figure 8, qualitative and quantitative researchers could collaborate in order to provide a more complete answer. In the described scenario, after the qualitative researchers have determined the different views, the quantitative researchers could, then, use this information to develop the

choices offered in the opinion poll. Specific to this thesis, while the meta-ethnography identified the four types of uncertainties, the researchers could then be able to develop quantitative tools that would help policy-makers navigate through the uncertainties inherently present in policy development. The successful application of such tools could enable the policy-makers to undertake evidence-based decision-making.

As such, the roles of quantitative and qualitative research within health policy, as outlined in Figure 8, could enable optimal knowledge translation and application.

CHAPTER 4: DISCUSSION

The purpose of this thesis was twofold. From the methodological perspective, the objective was to assess the relative strengths and limitations of the two knowledge synthesis strategies, systematic review of quantitative studies and meta-ethnography of qualitative studies, in order to understand their roles in health care policy-making. From a clinical context perspective, this project sought advance understanding uncertainty in decision-making by exploring specific types of uncertainty in the decision-making process and their impact in regards to the implementation of a HPV vaccine policy. As such, the two knowledge synthesis strategies were undertaken in order to enable a comparison of the knowledge synthesis methods as well as to determine the contribution of each strategy to this clinical scenario.

Seventeen quantitative studies, including 16 decision analytic models, were eligible for the systematic review. As the systematic review aimed to determine the impact on uncertainty on the final policy decision, the concept of uncertainty was first defined in the context of the models reflected in the studies' descriptions. Any model parameter, which if changed, caused a degree of variation within the policy outcomes was identified as a type of uncertainty. This yielded six types of uncertainty: the duration of protection, the age of vaccination, cross protection, coverage rates, as well as the cost and efficacy of the HPV vaccine. In addition to presence or absence of uncertainty, the number of different uncertainty types articulated within each study (magnitude of uncertainty) was also considered. Across the studies, the number of types of uncertainty ranged from one to four. Though the focus of this analysis was on HPV vaccine literature, one can imagine that the types of uncertainty that emerged here may also play a role in the emergence of other technologies.

Despite the identification of several types of uncertainty, there was no clear or consistent relationship between its presence or absence and the ultimate funding decision. Indeed, none of the chi-square analyses found evidence of association between frequency of type of policy decisions (yes/neither, yes, or no) and the presence or absence of uncertainty. This also held true for each of the specific types of uncertainty considered. Further, no significant correlation was found between magnitude of uncertainty and perceived confidence in the policy decision.

With respect to the qualitative analysis, four studies were determined as eligible for the meta-ethnography, which aimed to determine the types of uncertainty that policy-makers must navigate in this specific context. After combining the 2nd order constructs by reciprocal translation, four 3rd order constructs were developed. These included uncertainty regarding the 'vaccine's characteristics', 'the public's acceptance of the vaccine', 'the manufacturer's intentions and motives', and lastly 'the system's ability to support the vaccine'. These concepts were, then, all linked together into a final line of argument regarding the uncertainty in the decision-making process of the HPV vaccine policy (Refer to Figure 6). This line of argument was further broadened into one that incorporated the types of uncertainty within the health-care policy-making process in general (Refer to Figure 7). This figure could be used by policy-makers when considering uncertainty within their respective decision-making process. As such, they could examine each type of uncertainty separately and determine whether said uncertainty exists in their specific setting. Though such an endeavour would not provide solutions, it could potentially enable policy-makers to discover types of uncertainty previously overlooked.

Furthermore, comparing and contrasting the steps of the two knowledge synthesis methods yielded some interesting insight. Despite the use of different types of empirical studies, many of the steps between the two strategies were quite similar. A major difference between the

eligibility criteria of the two methods was the degree to which the specificity of each of the elements could be defined and how this influenced the types of question(s) that could be asked. For example, the elements defining the qualitative research questions were much more open than those of the quantitative research questions. Specific outcomes could not identified *a priori* for the meta-ethnography as the researcher are seeking answers to 'why' or 'how' questions. In contrast, for the quantitative studies, the outcomes and metrics used to measure outcomes could be considered before the search was undertaken.

In addition, the tactics by which qualitative and quantitative studies were searched and selected varied considerably. Unlike the tools available for quantitative literature, the cataloguing and optimal search tactics of the qualitative studies' required significant tailoring, trial and error, and refinement. The great amount of time that was devoted to attain these studies suggests that new methods are required in library and information sciences in order to increase efficiency of the search process. Once the selection process was complete, however, the screening process for the meta-ethnography and systematic review were very similar, with the only difference being the types of questions on the full-text screening form. However, this was once again due to the difference in question initially posed by the two methodologies.

As quality appraisal was initially conducted by using modified reporting guidelines for both knowledge syntheses, the differentiation between completeness of reporting from the quality of a study became a significant premise within this thesis. As different tools have different aims, the CASP tool was also used for the qualitative studies. However, the quality could still not be properly assessed due to a lack of reporting regarding the methodology. As such, the importance of proper reporting should not be underestimated since a quality appraisal can only be truly optimized when enough information regarding the methodology is presented.

Since a lack of reporting was also present within the quantitative economic evaluations, the reflection of "true" quality may be compromised. Therefore, tools that evaluate reporting and methodological quality may be valuable.

Due to the type of answers being sought by each methodology, the major difference between the two tactics within the data extraction stage was the way that the data were recorded. While the quantitative answers were succinct and distinct, if not numerical, the qualitative answers were more descriptive and narrative. Finally, one of the most significant differences between the two tactics was the manner in which the data were analyzed. Using reciprocal translation, the types of uncertainty were derived by translating the concepts of the primary studies unto each other within the meta-ethnography. In contrast, some analytical techniques were employed to determine links between types of uncertainty and decisions. But small sample size hampered a full analytical investigation. Thus, the completeness of yield from an inquiry of quantitative studies is limited by the number of studies available.

In general, the difference existed between the rigidity and flexibility of quantitative and qualitative literature, respectively. A high degree of uniformity is not only considered as routine within quantitative research, it is also necessary in order to ensure high validity. In contrast, though the general methodological steps of qualitative studies are similar, the specific details can greatly vary, and more of an iterative process to developing a knowledge base is required. For instance, though all four consisted of key informant interviews with stakeholders, different numbers and types of individuals were included. However, as each methodology is adapted to their own respective type of questions and answers, neither is of greater value than the other. Specifically, the two knowledge synthesis strategies provided different perspectives of the context at hand and contributed to an understanding of the concept. Nonetheless, within the

larger context of evidence-based or evidence-informed practice, the use of quantitative methods clearly dominates. The traditional research hierarchy, which demonstrates different study designs' level of significance, does not even include qualitative research designs in the rubric. At the bottom of pyramid consists of case reports, which are followed sequentially by cross sectional surveys, case-control studies, cohort studies, RCTs, and lastly systematic reviews and meta-analyses (Guyatt, Rennie, Meade & Cook, 2008).

Yet, as this study shows and as has been reflected by the greater acceptance of qualitative research in the healthcare, both perspectives are important to fully understand a health problem. As the use of qualitative methodology becomes more established in health care research, conceptually parallel norms and standards, which exist for quantitative research, may be suitable. Daly et al. (2007) have attempted to progress towards such a scenario, by aiming to establish a hierarchy of qualitative research. Similar to the quantitative hierarchy, the bottom level of the pyramid is comprised of case studies. The other three levels consist of descriptive studies, conceptual studies, and generalizable studies in order of increasing significance. However, while systematic reviews are considered to be the highest form of quantitative evidence, no specific knowledge synthesis strategy has been clearly designated for qualitative health research designs. It is unclear how and if the qualitative research community will embrace this notion of 'hierarchy'. Indeed, given the lack of consensus on the value of critical quality appraisal itself, one wonders if such a line of reasoning will be supported. Furthermore, unlike quantitative research, which is mainly classified under one ideological umbrella, different qualitative studies may assume different epistemologies and undertake different levels of generalization. As such, developing such a hierarchy may, for a lack of a better idiom, be comparing apples to oranges.

Just as not all quantitative studies are designed or executed or reported equally well, the same reasoning could apply to qualitative studies. Similarly, while quantitative designs can vary on the extent to which conclusions are more or less definitively derived from the data, one might imagine that different qualitative approaches may yield interpretations that are more and less valid. However, a consensus has not yet even been reached regarding the legitimacy of appraising the quality of qualitative synthesis. Certain researchers argue that since qualitative research is a conceptually separate entity from quantitative research, conventional measures of quality, including validity, generalizability, and reliability, cannot be applied (Mays & Pope, 2000). This arises from the belief that qualitative studies do not uncover any unequivocal social truths but rather represent different perspectives of a stated reality. Yet, just as quantitative studies of varying levels of methodological quality exist, qualitative studies of different quality levels will also exist. However, if the quality is not assessed to begin with, studies of varying quality would not be differentiated from each other.

The use of the meta-ethnography as a way to combine the results of primary qualitative health research has become increasingly prevalent in the last decade. As previously stated, this knowledge synthesis method was developed by Noblit and Hare (1998) in the education field. By combining the different concepts to generate a comprehensive understanding of phenomena, this process is comparable to a meta-analysis, which also combines the results of the primary studies in order to understand the complete impact of a specific intervention. Within the context of this study, this approach served as a very valuable and rigorous methodological strategy to understand the phenomenon of uncertainty, specifically its types. Working alongside a systematic review to determine the impact of said uncertainty resulted in a clearer representation

of a specific phenomenon, which may potentially enable an optimal level of knowledge application by the policy-makers.

4.1: LIMITATIONS

Regardless of the scrutiny with which a study is conducted, limitations always exist. One of the main challenges in this study was to ensure that the search strategy was comprehensive enough to capture all the current literature upon the topic. Though four different search strategies were conducted, there is still a high likelihood that not all the relevant literature was attained, specifically all qualitative studies. As the original search strategy did not yield a high number of qualitative studies, a search strategy specifically targeting qualitative design was also conducted. The investment to retrieve the four eligible studies was significant and this is one of the challenges, and likely a key barrier, for decision-makers to use qualitative evidence.

The challenges in searching the current literature in the area of uncertainty are not only apparent with the qualitative literature. Indeed, the systematic search of the quantitative literature yielded primarily decision analytic models. In the interest of time, a secondary broad search akin to what was done with the qualitative search, which involved the concepts of the HPV vaccine, the decision-making process of policy-makers, and quantitative design, was not conducted. Had a general broad search been conducted, perhaps research studies using other quantitative designs may have been uncovered resulting in a different interpretation of results. However, researchers and decision-makers must make considered judgements in searching for evidence and choose tactics that are likely to result in the most favourable yield. Aiming for greater efficiencies in literature search methodologies may be a priority area for future efforts by the library science and information science communities.

Another major limitation of the study is the quality appraisal. As a well-established step of the systematic review, the decision analytic models' quality had to be assessed. However, no agreed upon criteria exist, such as the Cochrane Collaboration's tool for RCTs, for the types of studies reviewed in this thesis. As such, one of the reporting guidelines recommended by the Equator Network was modified for this process. Though they enabled a clear understanding of the studies' completeness of reporting, the actual quality of the methodology was not appraised. In addition, though some aspects were not reported, this does not necessarily equate to poor quality. Such a notion also applies to the quality appraisal of the qualitative literature.

Throughout the process, a key underlying challenge was to minimize bias in every step. Unlike systematic reviews, which have accompanying guidelines that specify the appropriate ways through which to reduce bias, meta-ethnographies may be more prone due to the subjective nature of the interpretations required on the reviewers' part. Though abstract screening, full-text screening, and data-extraction were conducted by two reviewers, error may have been introduced in the data analysis. Ideally, having a second person conduct a parallel analysis would likely enhance confidence of findings. For the quantitative literature, the uncertainty and their impact had to be indirectly derived, thereby enabling room for error. Moreover, the innate subjective nature of the concepts derived from the qualitative literature could have also introduced bias.

4.2: Future Directions

Due to the variety of perspectives regarding uncertainty, the end results of this thesis can serve as a valuable source of information for both policy-makers and other researchers in the field. While systematic reviews are promoted as the key method of knowledge synthesis in health research, meta-synthesis methods, including meta-ethnographies, are relatively new. A contribution of this thesis is to provide another worked example of meta-ethnographies. The

difficulties described in the methodology and results section may provide clearer insight into the use of the technique within the health context.

Specifically in regards to the role of quantitative and qualitative literature in health policy, Figure 8 provides a simple diagram, which could ideally lead to an optimal level of knowledge translation and application within the field. Concerning the specific HPV context, Figure 6 demonstrates the different sources of uncertainty within the decision-making process. As such, researchers can use this diagram when aiming to provide policy-makers with a greater source of clarity. In addition, the different types of uncertainty in regards to the vaccine were further generalized to all interventions that undergo the policy-making process.

Furthermore, the results of this integrated review are a recent and reliable source of information, which could be used for item formulation within the 'Advancing quality in cancer control and cancer system performance in the face of uncertainty' project. Since the ultimate aim of the greater project is to develop an instrument, which could aid in navigating through uncertainty, policy makers would be able to undergo the decision-making process in an evidence-based manner.

CHAPTER 5: CONCLUSION

In the past few decades, health care has become progressively more expensive and therefore, more publicized. As such, an integrated review focused upon the uncertainty within the policy-making process was a valid undertaking. Furthermore, selecting the HPV vaccine for the prevention of cervical cancer as the clinical scenario was reasonable as it had recently been deliberated within the decision-making process of policy-makers all over the world. A meta-ethnography and systematic review were conducted in order to determine the types of uncertainty and their impact upon the final decision in the context of the HPV vaccine for the prevention of cervical cancer. Furthermore, the methodology of both knowledge synthesis methods were compared and contrasted in order to determine their contributing roles within the context of health policy decision-making.

The identification of the types of uncertainty that exist with the decision-making process both specific to the HPV vaccine, as well as broadened to policy-making in general, can prove valuable to policy-makers. In order to ensure evidence-based policy-making, they could examine their respective decision-making process to assess whether uncertainty exists in regards to the identified types. As demonstrated within the King 2008 study, certain policy-makers heavily rely on economic evaluations. The results of the systematic review within this thesis demonstrated that the researchers' final recommendation regarding the vaccine was not impacted by either a specific type or number of uncertainty. As such, should policy-makers base their decision on the empirical evidence itself, rather than the authors' recommendation? Furthermore, though both quantitative and qualitative research methods may provide the policy-makers with answers, they represent different perspectives of the problem. As such, using both types of research designs would probably provide a clearer and more complete answer to the policy-makers' questions.

As such, not only were both the methodological and content objectives accomplished, the answers also provided worthwhile knowledge regarding the management of uncertainty within the decision-making process.

REFERENCES

Arbyn M, Bryant A, Beutels P, Martin-Hirsch PPL, Paraskevaidis E, Van Hoof E, Steben M, Qiao Y, Zhao FH, Schneider A, Kaufmann A, Dillner J, Markowitz L, & Hildesheim A. (2011). Prophylactic vaccination against human papillomaviruses to prevent cervical cancer and its precursors (Protocol).*Cochrane Database of Systematic Reviews* 2011, Issue 4. Art. No.: CD009069. DOI: 10.1002/14651858.CD009069.

Atkins S, Lewin S, Smith H, Engel M, Fretheim A, &Volmink J. (2008). Conducting a meta-ethnography of qualitative literature: Lessons learnt.BMC Medical Research Methodology. 8:21.

Barnabas, RV, Laukkanen, P, Koskela, P, Kontula, O, Lehtinen, M, &Garnett, GP. (2006). Epidemiology of HPV 16 and cervical cancer in Finland and the potential impact of vaccination: mathematical modelling analyses.*PLoS Medicine.* 3:e138.

Berchtold, A, Michaud, PA, Nardelli-Haefliger, D, & Suris, JC. (2006). Vaccination against humanpapillomavirus in Switzerland: Simulation of the impact on infection rates. *International Journal of Public Health.* 55(1):25-34.

Bosch, FX, Manos, MM, Munoz, N, Sherman, M, Jansen, AM, Peto, J, Schiffman, MH, Moreno, V, Kurman, R, Shan, KV & the International Biological Study of Cervical Cancer Study Group. Prefalence of human papillomavirus in cervical cancer: a worldwide perspective. *Journal of the National Cancer Institute.* 87(11):796-802.

Bosch, FX, Lorincz, A, Munoz, N, Meijer, CJLM, & Shah, KV. (2002). The causal relation between human papillomavirus and cervical cancer. *Journal of Clinical Pathology.* 55:244-265.

Boot, HJ, Wallenburg, I, de Melker, He, Mangen, MJ, Gerritsen, AA, van der Maas, NA, Berkhof, J, Meijer, CJ, Kimman, TG. (2007).Assessing the introduction of universal human papillomavirus vaccination for preadolescent girls in the Netherlands.*Vaccine*. 25(33):6245-56.

Boyle, T. (2009, September 29). Ontario will continue to HPV vaccine program despite British death. *The Star*, HealthZone, http://www.thestar.com/article/702503 (accessed on July 30, 2011).

Brashers, DE. (2001). "Communication and uncertainty management." *Journal of Communication.*51: 477-497.

Brisson, M, Van de Velde, N, de Wals, P, & Boily, MC. (2007). The potential cost-effectiveness of prophylactic human papillomavirus vaccines in Canada.*Vaccine.* 25:5399-408.

Bruinvels, DJ, Stiggelbout, AM, Kievit, J, van Houwelingen, HC, and Habbema, JDK. (1994). Follow Up of Patients with Colorectal Cancer: A Meta-Analysis. *Annals of Surgery*. 219(2):174-182.

Campbell R, Pound P, Pope C, Britten N, Pill, R, Morgan M, Donovan J. (2003).Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. *Social Science &Medicine*. 56(4):671-684.

Campbell, R, Britten N, Pound P, Donovan J, Morgan M, Pill R, & Pope C. (2003) Using meta-ethnography to synthesise qualitative research. In J Popay (ed), *Moving beyond effectiveness in evidence synthesis :Methodological issues in the synthesis of diverse sources of evidence* (pg 75-82). Retrieved on September 15, 2010 from

http://www.nice.org.uk/niceMedia/docs/Moving_beyond_effectiveness_in_evidence_synthesis2.pdf

Canadian Cancer Society's Steering Committee on Cancer Statistics.(2010). *Canadian Cancer Statistics 2010*. Toronto, ON: Canadian Cancer Society.

Canadian Institute of Health Research. (2011). Synthesis Resources. *Canadian Institute of Health Research*. Retrieved August 3, 2011, from http://www.cihr-irsc.gc.ca/e/36331.html

Chichareon, S, Herrero, R, Munoz, N, Bosch, XF, Jacobs, MV, Deacon, J, Santamaria, M, Chongsuvivatwong, V, Meijer, CJLM, &Walboomers. (1998). Risk factors for cervical cancer in Thailand: A case-control study. *Journal of the National Cancer Institute.*90(1):50-57.

Colgrove, J, Abiola, S, & Mello, MM. (2010).HPV vaccination mandates--lawmaking amid political and scientific controversy.*New England Journal of Medicine*. 363(8):785-791.

Consensus Conference on Guidelines on Economic Modelling in Health Technology Assessment. (2000). Decision analytic modelling in the economic evaluation of health technologies: A consensus statement. *Pharmacoeconomics.*17(5):443-444.

Creswell, JW, & Plano Clark, VL. (2007). Designing and conducing mixed methods research. Thousand Oaks, California: SAGE Publication Inc.

Dekker, RL. (2008). Human papillomavirus vaccine legislation in Kentucky.*Policy, Politics, and Nursing Practice.*9(1):40-49.

DeLuca, JB, Mullins, MM, Lyles, CM, Crepaz, N, Kay, L, & Thadiparthi, S. (2008). Developing a Comprehensive Search Strategy for Evidence Based Systematic Reviews. *Evidence Based Library and Information Practice.* 3(1):4-32.

Dixon-Woods M, Sutton A, Shaw R, et al. (2007).Appraising qualitative research for inclusion insystematic reviews: a quantitaive and qualitative comparison of three methods.*Jousnalof Health Services Research & Policy.*12(1):42-47.

Equator Network. (2009). About Equator. *Equator Network.* Retrieved on May 4, 2011, from http://www.equator-network.org/about-equator/

French, Km, Barnabas, RV, Lehtinen, M, Kontula, O, Pukkala, E, Dillner, J,& Garnett, GP. (2006) .Strategies for the introduction of human papillomavirus vaccination: modelling the optimum age and sex-specific pattern of vaccination in Finland. *British Journal of Cancer*. 96:514-8.

FUTURE II Study Group. (2007). Quadrivalent vaccine against human papillomavirus to prevent high-grade cervical lesions.*New England Journal of Medicine.* 356:1915-27.

Garland, Suzanne M. M.D., Mauricio Hernandez-Avila, M.D., Cosette M. Wheeler, Ph.D., Gonzalo Perez, M.D., Diane M. Harper, M.D., M.P.H., SeppLeodolter, M.D., Grace W.K. Tang, M.D., Daron G. Ferris, M.D., Marc Steben, M.D., Janine Bryan, Ph.D., Frank J. Taddeo, Ph.D., RadhaRailkar, Ph.D., Mark T. Esser, Ph.D., Heather L. Sings, Ph.D., Micki Nelson, B.S., John Boslego, M.D., Carlos Sattler, M.D., Eliav Barr, M.D., and Laura A. Koutsky, Ph.D.. (2007). Quadrivalent vaccine against human papillomavirus to prevent high-grade cervical lesions. *New England Journal of Medicine.* 356:1915-1927.

GAVI Alliance.(2011). GAVI's Mission. *GAVI Alliance*. Accessed on August 6, 2011 from http://www.gavialliance.org/about/mission/

Ghosh, AK (2004). On the challenges of using evidence-based information: The role of clinical uncertainty. *Journal of Laboratory and Clinical Medicine.*144(8):60-64.

Giacomini, M. (2010). Theory matters in qualitative health research. In I. Bourgeault, R. Dingwall, & R. De Vries (Eds.). *The SAGE handbook of qualitative methods in health research* (pp. 125-156). Thousand Oaks, California: SAGE Publications Inc.

Goldie, SJ, Kohli, M, Grima, D, Weinstein, MC, Wright, TC, Bosch, FX, & Frano, E. (2004). Projected clinical benefits and cost-effectiveness of a human papillomavirus 16/18 vaccine. *Journal of the National Cancer Institute.* 96(8):604-615.

Goldie, SJ, O'Shea, M, Diaz, M, & Kim, SY. (2008). Benefits, cost requirements and cost-effectivenses of the HPV 16, 18 vaccine for cervical cancer prevention in developing countries: policy implications. *Reproductive Health Matters*. 16(86-96).

Graham, ID, Logan, J, Harrison, MB, Staus, SE, Tetroe, J, Caswell,W, & Robinson, N. (2006). Lost in Knowledge Translation: Time for a mao? *Journal of Continuing Education in the Health Professions*. 26(1):13-24.

Guerrero, E, Daniel, RW, Bosch, FX, Castellsague, X, Munoz, N, Gili, P, Viladiu, P, Navarro, C, Zubiri, ML, & Ascunce, N. (1992). Comparison of ViraPap, Southern hybridization, and polymerase chain reaction methods for human papillomavirus identification in an epidemiological investigation of cervical cancer. *Journal of Clinical Microbiology.* 33(8):2951-2959.

Guyatt, G, Rennie, D, Meade, M, & Cook, D. (2008). *User's Guides to the Medical Literature: A manual for evidence-based clinical practice.* United States of America: McGraw-Hill Companies, Inc.

Haas, M, Ashton, T, Blum, K, Christiansen, T, Conis, E, Crivelli, L, Kin Lim, M. Lisac, M, MacAdam, M, &Schlette, S. (2009). Drugs, sex, money and power: An HPV vaccine case study. *Health policy*. 92:288-295.

Harries, J, Moodley, J, Barone, MA, Mall, S &Sinanovic, E. (2009).Preparing for HPV vaccination in South Africe: key challenges and opinions.*Vaccine.* 27(1):28-44.

Herrero, R, Hildesheim, A, Bratti, C, Sherman, ME, Hutchinson, M, Morales, J, Balmaceda, I, Greenberg, MD, Alfaro, M, Burk, RD, Wacholder, S, Plummer, M, &Schiffman, M. (2000). Population-based study of human papillomavirus infection and cervical neoplasia in rural Costa Rica.*Journal of the National Cancer Institute.*92(6):464-474.

Higgins JPT, Green S (editors).*Cochrane Handbook for Systematic Reviews of Interventions* Version 5.0.2 [updated September 2009]. The Cochrane Collaboration, 2009.Available from www.cochrane-handbook.org.

Hughes, JP, Garnett, GP, &Koutsky, L. (2002). The theoretical population level impact of a prophylactic human papilloma virus vaccine. *Epidemiology.* 13:631-9.

Hurwitz, H, Fehrenbacher, L, Novotny, W, Cartwright, T, Hainsworth, J, Heim, W, Berlin, J, Baron, A, Griffing, S, Holmgren, E, Ferrara, N, Fyfe, G, Rogers, B, Ross, R, & Kabbinavar, F. (2004). Bevacizumab plus Irinotecan, Fluorouracil, and Leucovorin for Metastic Colorectal Cancer. *New England Journal of Medicine.* 350:2335-2342.

Hurwitz, H, and Saini, S. (2006). Bevacizumab in the Treatment of Metastatic Colorectal Cancer: Safety Profile and Management of Adverse Effects. *Seminars in Oncology.* 23(S10):S26-S34.

Insinga, RP, Dasbach, EJ, Elbasha, EH, Puig, A, Reynales-Shigematsu, LM.(2007). Cost-effectiveness of quadrivalent human papillomavirus (HPV) vaccination in Mexico: a transmission dynamic model-based evaluation.*Vaccine*. 26: 128-139.

Jones L, Hawkins N, Westwood M, Wright K, Richardson G, and Riemsma R. (2004).Systematic review of the clinical effectiveness and cost-effectiveness of

capecitabine (Xeloda) for locally advanced and/or metastatic breast cancer.*Health Technology Assessment.*8(5):iii, xiii-xvi, 1-143.

Katz, VL, Lentz, GM, Lobo, RA, &Gershenson, DM. (2007). *Comprehensive Gynecology*. (5th ed.). Philadelphia: Mosby.

Kirkwood, K. (2008). Catholic bioethical perspectives on Ontario's HPV vaccination.*Open Medicine.* 2(4):E23-25.

King, LA, Levi-Bruhl, D, O'Flanagan, D, Bacci, S, Lopalco, PL, Kudjawu Y, Salmaso, S, VENICE Country Specific Gate Keeps and Contact Points.(2008). Introduction of human papillomavirus (HPV) vaccination into national immunisation schedules in Europe: Results of the VENICE 2007 survey.*Eurosurveillance.*13(33):18954.

Kohli, M, Ferko, N, Martin, A, Franco, El, Jenkins, D, Gallivan, S, Sherlaw-Johnson, C, & Drummond, M. (2007).Estimating the long-term impact of a prophylactic human papillomavirus 16/18 vaccine on the burden of cervical cancer in the UK.*British Journal of Cancer.* 96(1):143-150.

Kulasingam, SL & Myers, ER.(2003). Potential health and economic impact of adding a human papillomavirus vaccine to screening programs.*Journal of the American Medical Association.* 290:781-789.

Lacey, JVJr, Frisch, M, Brinton, LA, Abbas, FM, Barnes, WA, Gravitt, PE, Greenberg, MD, Greene, SM, Hadjimichael, OC, McGowan, L, Mortel, R, Schwartz, PE, Zaino, RJ, Hildesheim, A. (2001). Associations between smoking and adenocarcinomas and the squamous cell carcinomas of the uterine cervix (United States).*Cancer Causes Control.* 12(2):153-161.

Lexchin, J, Bero, LA, Djulbegovic, B, & Clark, O. (2003). Pharmaceutical industry sponsorship and research outcome and quality: systematic review. *British Medical Journal.* 326(7400):1167.

Loveman, E, Jones J, Hartwell D, Bird A, Harris P, Welch K, Clegg A. (2010). The clinical effectiveness and cost-effectiveness of topotecan for small cell lung cancer: a systematic review and economic evaluation. *Health Technology Assessment.*14(19):1-204.

Malpass A, Shaw A, Sharp D, Walter F, Feder G, Ridd M, & Kessler D. (2008). "Medication career" or "moral career"? The two sides of managing antidepressants: a meta-ethnography of patients' experience of antidepressants. *Social Science & Medicine*. 68(1):154-68.

Mays, GP, Smith, SA, Ingram, RC, Racster, LJ, Lamberth, CD, and Lovely, ES. (2009). Public Health Delivery Systems: Evidence, Uncertainty, and Emerging Research Needs. *American Journal of Preventative Medicine.*36(3): 256-265.

Mays N, & Pope C. (2000).Assessing quality in qualitative research.*British Medical Journal.*320:50-52.

McKibbon, A &Wilczynski, N. (2009).*PDQ: Evidence-based Principles and Practice.* China: People's Medical Publishing House.

Mullens, CD, Montgomery, R, and Tunis, S. (2010). Uncertainty in Assessing the Value of Oncology Treatments.*The Oncologist.* 15(S1):58-64.

Myriam Hunink, MG, & Glasziou, PP. (2001). Decision-making in health and medicine: integrating evidence and values. Cambridge, United Kingdom: Cambridge University Press.

Noblit GW,& Hare RD. (1988). Meta-ethnography: Synthesizing Qualitative Studies. Newberrry Park, California: Sage Publications.

Nujiten MJC, Pronk MH, Brorens MJA, et al. (1998). Reporting format for economic evaluations. Part II: Focus on Modelling Studies. *Pharmaeconomics.*14(3): 259:268.

Ontario Health Technology Advisory Committee. (2011). "Evidence-based advice on technology to advance health". Retrieved on September 14, 2011, from http://www.health.gov.on.ca/english/providers/program/ohtac/ohtac_mn.html

Ottawa Hosptial Reserach Institute. (2009). "Patient Descion Aids." Retrieved on August 02, 2010, from http://decisionaid.ohri.ca/

Paavonen, J, Jenkins, D, Bosch, FX, Naud, P, Salmerón, J, Wheeler, CM, Chow, SN, Apter, DL, Kitchener, HC, Castellsague, X, de Carvalho, NS, Skinner, SR, Harper, DM, Hedrick, JA, Jaisamrarn, U, Limson, GA, Dionne, M, Quint, W, Spiessens, B, Peeters, P, Struyf, F, Wieting, SL, Lehtinen. MO, &Dubin, G; HPV PATRICIA study group.(2007). Efficacy of a prophylactic adjuvanted bivalentL1 virus-like-particle vaccine against infection with human papillomavirus types 16 and 18 in young women: an interim analysis of a phase III double-blind, randomised controlled trial. *Lancet.* 369:2161-70.

Petticrew, M, and Egan, M. (2003).Relevance, Rigour and Systematic Reviews. In J Popay (ed), *Moving beyond effectiveness in evidence synthesis :Methodological issues in the synthesis of diverse sources of evidence* (pg. 7-8). Retrieved on September 15, 2010 from http://www.nice.org.uk/niceMedia/docs/Moving_beyond_effectiveness_in_evidence_synthesis2.pdf

Pineros, M, Wiesner, C, Cortes, C, & Trujillo, LM. (2010). HPV vaccine introduction at the local level in a developing country: attitudes and criteria among key actors. *Cadernos de Saude Publica.* 26(5): 900-908.

Politi MC, Han PKJ, and Col NF. (2007) Communicating the Uncertainty of Harms and Benefits of Medical Interventions. *Medical Decision-making*. 27:681-695.

Rambout, L, Hopkins, L, Hutton, B, & Fergusson, D. (2007). Prophylactic vaccination against human papillomavirus infection and disease in women: a systematic review of randomized controlled trials. *CMAJ.* 77(5):469-479.Cost-effectiveness analysis of a quadrivalent human papilloma virus vaccine in Mexico.*Archives of Medical Research.*40(6): 503-513.

Reynales-Shigematsu, LM, Rodrigues, ER, & Lazcono-Ponce, E. (2009). Cost-effectiveness analysis of a quadrivalent human papilloma virus vaccine in Mexico. *Archives of Medical Research.* 40:503-513.

Roughead, EE, Gilbert, AL, & Vitry, A. (2008). The Australian funding debate on quadrivalent HPV vaccine: A case study for the national pharmaceutical policy. *Health Policy*. 88(2-3):250-257.

Rogoza, RM, Ferko, N, Bently, J, Meijer, CJLM, Berkhof, J, Wang, K-L, Downs, L, Smith, J, & Frano, E. (2008). Optimization of primary and secondary cervical cancer prevention strategies in an era of cervical cancer vaccination: A multi-regional health economic analysis. *Vaccine*. 26:F46-F58.

Rycroft-Malone, J, Fontenla, M, Seers, K, and Bick, D. (2009). Protocol-based care: the standardisation of decision-making? *Journal of Clinical Nursing.*18: 1490-1500.

Sanders, GD & Taira, AV. (2003).Cost-effectiveness of a potential vaccine for human papillomavirus.*Emerging Infectious Disease.*9:37-48.

Shaw, RL, Booth, A, Sutton, AJ, Miller, T, Smith, JA, Young, B, Jones, DR, & Dixon-Woods, M. (2004).Finding qualitative research: an evaluation of search strategies.*BMC Medical Research Methodology*.4(5).

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.* Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view

Sorrentino, RM &Roney, CJR. (2000). *The uncertain mind: Individual differences in facing the unknown.*Philadelphia: Psychology Press.

Spring, B (2008). Health decision-making: lynchpin of evidence-based practice. *Medical Decision Making.* 28(6):866-874.

Suarez, E, Smith, Js, Bosch, Fx, Nieminen, P, Chen, CJ, Torvinen, S, Demarteau, N, & Standaert, B. (2008) Cost-effectiveness of vaccination against cervical cancer: A multi-regional analysis assessing the impact of vaccine characteristics and alternative vaccination scenarios. *Vaccine.*26(Suppl5):F29-F45.

Taira, AV, Neukermans, CP, & Sanders, GD. (2004). Evaluating human papillomavirus vaccination programs.*Emerging Infectious Disease.*10:1915-1923.

Thomas, DB, Ray, RM, Koetsawang, A, Kiviat, N, Kuypers, J, Qin, Q, Ashley, RL, &Koetsawang, S. (2001). Human papillomaviruses and cervical cancer in Bangkok. I. Risk factors for invasive cervical carcinomas with human papillomavirus types 16 and 18 DNA. *American Journal of Epidemiology.*153(8):723-731.

Tong A, Sainsbury P, and Craig J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care.*19(6):349-357.

Tsui, K, LaMontagne, DS, Levin, C, Bingham, A, & Menezes, L. Policy-development for human papillomavirus vaccine introduction in low-resource settings.*Open Vaccine Journal* 2:113-122.

Turner HM,& Nye C. (2007). The Campbell Collaboration: Systematic Reviews and Implications for Evidence Based Practice. *Technical Brief by National Center for Dissemination of Disability Research.* 16. Retrieved from http://www.ncddr.org/kt/products/focus/focus16/.

US Food and Drug Administration. (2010). What We Do. Retrieved on September 12th, 2010 from http://www.fda.gov/AboutFDA/WhatWeDo/default.htm.

Villa, D, Hedden, L, Peacock, S, Kennecke, HF. (2010) Cost-effectiveness analysis of the addition of Bevacizumab to first-line chemotherapy in metastatic colorectal cancer. *Journal of Clinical Oncology*.2010 ASCO Annual Meeting Proceedings. 28(Supp15):3623

WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). (2010). Human Papillomavirus and Related Cancers in World.Summary Report 2010. Retrieved on July 3rd, 2011 from www.who.int/hpvcentre

Wilczynski, NL, Marks, S, and Haynes, RB. (2007). Search strategies for identifying qualitative studies in CINAHL. *Qualitative Health Research.* 17(5):705-710.

Wong, SS, Wilczynski, NL, Haynes, RB, and Hedges Team. (2004). Developing optimal search strategies for detecting clinically relevant qualitative studies in MEDLINE. *Studies in Health Technology and Informatics.* 107(Pt 1): 311-6.

Ylitalo, N, Sorensen, P, Josefsson, AM, Magnusson, PK, Andersen, PK, Ponten, J, Adami, HO, Gyllensten, UB, &Melbye, M. (2000). Consistent high viral load of human papillomavirus 16 and risk of cervical carcinoma in situ: a nested case-control study. *Lancet*. 355(9222):2194-2198.

TABLES

TABLE 1: RESULTS OF THE FUTURE I STUDY

		Per-Protocol	ITT
Rate of CIN1	Vaccine Group	0	0.6
	Placebo Group	0.9	1.6
Efficacy against CIN1 (%)*		100	62
Rate of CIN2	Vaccine Group	0	0.5
	Placebo Group	0.4	0.7
Efficacy against CIN2 (%)*		100	30
Rate of CIN3	Vaccine Group	0	0.5
	Placebo Group	0.3	0.6
Efficacy against CIN3 (%)*		100	12
Rate of AC is	Vaccine Group	0	<0.1
	Placebo Group	0.1	0.1
Efficacy against AC is (%)*		100	76

Rate = number of participants with the end point per 100 person-years at risk
CIN1: Grade One Cervical Intraepithelial Neoplasia
CIN2: Grade Two Cervical Intraepithelial Neoplasia
CIN3: Grade Three Cervical Intraepithelial Neoplasia
AC is: Adenocarcinoma in situ
*$p < 0.05$

TABLE 2: RESULTS OF THE FUTURE II STUDY

		Per-Protocol	ITT
Rate of CIN2	Vaccine Group	0	0.2
	Placebo Group	0.2	0.5
Efficacy against CIN2 (%)		100	57
Rate of CIN3	Vaccine Group	<0.1	0.3
	Placebo Group	0.2	0.6
Efficacy against CIN3 (%)		97	45
Rate of ACis	Vaccine Group	0	<0.1
	Placebo Group	<0.1	<0.1
Efficacy against ACis (%)		100	28

Rate = number of participants with the end point per 100 person-years at risk
CIN2: Grade Two Cervical Intraepithelial Neoplasia
CIN3: Grade Three Cervical Intraepithelial Neoplasia
ACis: Adenocarcinoma in situ

TABLE 3: RESULTS OF THE PATRICIA STUDY

		ATP-E	TVC
HPV Vaccine Group	Number of Participants	7344	8667
	Number of Participants reporting CIN2	4	82
HepA Vaccine Group (Comparator)	Number of Participants	7312	8682
	Number of Participants reporting CIN2	56	174
Efficacy against CIN2 (%)		92.9%	52.8%
HPV Vaccine Group	Number of Participants	7344	8667
	Number of Participants reporting CIN3	2	43
HepA Vaccine Group (Comparator)	Number of Participants	7312	8682
	Number of Participants reporting CIN3	10	65
Efficacy against CIN3 (%)		80.0%	33.6%

HepA = Hepatitis A
CIN2: Grade Two Cervical Intraepithelial Neoplasia
CIN3: Grade Three Cervical Intraepithelial Neoplasia

TABLE 4: YEAR OF FUNDING FOR DEVELOPED COUNTRIES

Country	**Year of Funding**
Australia	2007
Canada	2006-2008
Denmark	2009
Germany	2007
New Zealand	2008
Switzerland	2008
United States	2006

TABLE 5: SYSTEMATIC REVIEW AND META-ETHNOGRAPHY STEPS

Systematic Review [22]	**Meta-Ethnography [23]**	
Formulating review question	Getting Started	**Atkins et al [20]**
Defining inclusion and exclusion criteria	Deciding what is relevant to the initial interest	Defining the focus
Locating studies (search strategies)		Locating relevant studies
Selecting studies		Deciding upon studies to include
Assessing study quality		Assessing the quality of studies
Extracting Data	Reading the studies	
Analyze and Presenting Results	Determining how the studies are related	
	Translating studies into one another	
Interpreting Results	Synthesizing translations	
	Expressing the synthesis	

TABLE 6: SHAW ET AL. (2007) THESAURUS STRATEGY

Medline	**Embase**	**Cinahl**	**Social Science Citation Index (SSCI)**
Qualitative Research/	qualitative stud$.mp.	Qualitative Studies/	(qualitative research
Nursing Methodology Research/	nursing methodology research.mp.	Research Nursing/	qualitative stud*
Questionnaires/	questionnaire/	exp Questionnaires/	nursing research methodology
exp Attitude/	attitude/	exp Attitude/	questionnaire
Focus Groups/	focus group$.mp.	Focus Groups/	attitude
discourse analysis.mp.	discourse analysis.mp.	Discourse Analysis/	focus groups
content analysis.mp.	content analysis.mp.	Content Analysis/	discourse analysis
ethnographic research.mp.	ethnographic research.mp.	Ethnographic Research/	content analysis
ethnological research.mp.	ethnological research.mp.	Ethnological Research/	ethnographic research
ethnonursing research.mp.	ethnonursing research.mp.	Ethnonursing Research/	ethnological research
constant comparative method.mp.	constant comparative method.mp.	Constant Comparative Method/	ethnonursing research
qualitative validity.mp.	qualitative validity.mp.	exp Qualitative Validity/	constant comparative method
purposive sample.mp.	purposive sample.mp.	Purposive Sample/	qualitative validity
observational method$.mp.	observational method$.mp.	exp Observational Methods/	purposive sampl*
field stud$.mp.	field stud$.mp.	Field Studies/	observational research
theoretical sampl$.mp.	theoretical sampl$.mp.	Theoretical Sample/	field stud*
phenomenology/	phenomenology/	Phenomenology/	theoretical sampl*
phenomenological research.mp.	phenomenological research.mp.	Phenomenological Research/	phenomenology
life experience$.mp.	life experience$.mp.	exp Life Experiences/	phenomenological research
cluster sampl$.mp.	cluster sampl$.mp.	exp Cluster Sample/	life experiences
or/1-20[1]	or/1-20	or/1-20	cluster sample*)

TABLE 7: SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

Medline	**Embase**	**Cinahl**	**Social Science Citation Index**[2]
ethnonursing.af.	ethnonursing.af.	ethnonursing.af.	(ethnonursing
ethnograph$.mp.	ethnograph$.mp.	ethnograph$.mp.	ethnograph*
phenomenol$.af.	phenomenol$.af.	phenomenol$.af.	phenomenol*
grounded theory.mp.	grounded theory.mp.	grounded theory.mp.	grounded theor*
(grounded adj (theor$ or study or studies or research or analys?s)).af.	(grounded adj (theor$ or study or studies or research or analys?s)).af.	(grounded adj (theor$ or study or studies or research or analys?s)).af.	grounded stud*
((life stor$) or (women's stor$))	((life stor$) or (women's stor$))	((life stor$) or (women's stor$))	grounded research
(emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or (participant observ$).tw.	(emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or (participant observ$).tw.	(emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or (participant observ$).tw.	grounded analys?s
((social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or (post modern$) or post-modern$ or feminis$ or interpret$).mp.	((social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or (post modern$) or post-modern$ or feminis$ or interpret$).mp.	((social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or (post modern$) or post-modern$ or feminis$ orinterpret$).mp.	life stor*
(action research or cooperative inquir$ or (co operative inquir$) or (co-operative inquir$)).mp.	(action research or cooperative inquir$ or (co operative inquir$) or (co-operative inquir$)).mp.	(action research or cooperative inquir$ or (co operative inquir$) or (co-operative inquir$)).mp.	women's stor*
(humanistic or existential or experiential or paradigm$).mp.	(humanistic or existential or experiential or paradigm$).mp.	(humanistic or existential or experiential or paradigm$).mp.	emic
(field adj (study or studies or research).tw.	(field adj (study or studies or research).tw.	(field adj (study or studies or research).tw.	etic
(human science).tw.	(human science).tw.	(human science).tw.	hermeneutic*
(biographical method).tw.	(biographical method).tw.	(biographical method).tw.	heuristic*
(qualitative validity).af.	(qualitative validity).af.	(qualitative validity).af.	semiotic*
(purposive sampl$).af.	(purposive sampl$).af.	(purposive sampl$).af.	data saturat*
(theoretical sampl$).af.	(theoretical sampl$).af.	(theoretical sampl$).af.	participant observ*)

((purpos$ adj4 sampl$) or (focus adj group$)).af.	((purpos$ adj4 sampl$) or (focus adj group$)).af.	((purpos$ adj4 sampl$) or (focus adj group$)).af.	(social construct*
(account or accounts or unstructured or open-ended or (open ended) or text$ or narrative$.mp.	(account or accounts or unstructured or open-ended or (open ended) or text$ or narrative$.mp.	(account or accounts or unstructured or open-ended or (open ended) or text$ or narrative$.mp.	postmodern*
((life world) or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.	((life world) or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.	((life world) or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.	post structural*
(lived experience$).tw.	(lived experience$).tw.	(lived experience$).tw.	feminis*
(life experience$.mp.	(life experience$.mp.	(life experience$.mp.	interpret*
(cluster sampl$).mp.	(cluster sampl$).mp.	(cluster sampl$).mp.	action research
(theme$ or thematic).mp.	(theme$ or thematic).mp.	(theme$ or thematic).mp.	co-operative inquir*
categor$.mp.	categor$.mp.	categor$.mp.	humanistic
observational method$.af.	observational method$.af.	observational method$.af.	existential
field stud$.mp.	field stud$.mp.	field stud$.mp.	experiential
focus group$.af.	focus group$.af.	focus group$.af.	paradigm*
questionnaire$.mp.	questionnaire$.mp.	questionnaire$.mp.	field stud*
(content analysis).af.	(content analysis).af.	(content analysis).af.	field research
(thematic analysis).af.	(thematic analysis).af.	(thematic analysis).af.	human science)
(constant comparative).af.	(constant comparative).af.	(constant comparative).af.	(biographical method*
(discourse analys?s).af.	(discourse analys?s).af.	(discourse analys?s).af.	qualitative validity
((discourse$ or discurs$) adj3 analys?s).tw.	((discourse$ or discurs$) adj3 analys?s).tw.	((discourse$ or discurs$) adj3 analys?s).tw.	purposive sampl*
(constant adj (comparative or comparison)).af.	(constant adj (comparative or comparison)).af.	(constant adj (comparative or comparison)).af.	theoretical sampl*
(narrative analys?s).af.	(narrative analys?s).af.	(narrative analys?s).af.	open-ended account*
heidegger$.tw.	heidegger$.tw.	heidegger$.tw.	unstructured account*
colaizzi$.tw.	colaizzi$.tw.	colaizzi$.tw.	narrative*
speigelberg$.tw.	speigelberg$.tw.	speigelberg$.tw.	life world
(van adj manen$).tw.	(van adj manen$).tw.	(van adj manen$).tw.	conversation analys?s)
(van adj kaam$).tw.	(van adj kaam$).tw.	(van adj kaam$).tw.	(theoretical saturation
(merleau adj ponty$).tw.	(merleau adj ponty$).tw.	(merleau adj ponty$).tw.	lived experience*
husserl$.tw.	husserl$.tw.	husserl$.tw.	life experience*

giorgi$.tw.	giorgi$.tw.	giorgi$.tw.	cluster sampl*
foucault$.tw.	foucault$.tw.	foucault$.tw.	theme*
(corbin$ adj2 strauss$).tw.	(corbin$ adj2 strauss$).tw.	(corbin$ adj2 strauss$).tw.	thematic analysis
(strauss$ adj2 corbin$).tw.	(strauss$ adj2 corbin$).tw.	(strauss$ adj2 corbin$).tw.	constant comparative
(glaser$ adj2 strauss$).tw.	(glaser$ adj2 strauss$).tw.	(glaser$ adj2 strauss$).tw.	discourse analys?s
glaser$.tw.	glaser$.tw.	glaser$.tw.	discurs*
or/1- 48	or/1- 48	or/1- 48	narrative analys?s)
			(heidegger*
			colaizzi*
			speigelberg*
			van manen*
			van kaam*
			merleau ponty*
			husserl*
			giorgi*
			foucault*
			corbin*
			strauss *
			glaser*)

TABLE 8: SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

Medline	**Embase**	**Cinahl**	**Social Sciences Citation Index**
findings.af.	findings.af.	findings.af.	(findings
interview$.af. or Interviews/	interview$.af. or Interviews/	interview$.af. or exp Interviews/	interview*
qualitative.af.	qualitative.af.	qualitative.af.	qualitative)
or/1-3	or/1-3	or/1-3	

TABLE 9: FINAL POOL OF ARTICLES

Quantitative			Qualitative		
#	**PI Last Name**	**Year**	**#**	**PI Last Name**	**Year**
01	Barnabas	2006	01A	Bartolini	2010
02	Berchtold	2010	01B	Biellik	2009
03	Boot	2007	01C	Bingham	2009
04	Brisson	2007	01D	Bingham	2009
05	French	2007	02	Colgrove	2010
06	Goldie	2004	03	Harries	2009
07	Goldie	2008	01E	Katahoire	2008
08	Hughes	2002	01F	Nghi	2010
09	Insinga	2007	04	Pineros	2010
10	King	2008	01G	Tsui	2009
11	Kohli	2007			
12	Kulasingam	2003			
13	Reynales-Shigematsu	2009			
14	Rogoza	2008			
15	Sanders	2003			
16	Suarez	2008			
17	Taira	2004			

TABLE 10: PARAMETERS OF THE DECISION ANALYTIC MODELS

Study	Comparator	Setting	Patient Population			Type of HPV Vaccine	Vaccine			Horizon
			Gender	Age	Number		Efficacy (%)	Coverage (%)	Duration	
Barnabas 2006	Screening - Conventional	Finland	Female	15	N/S	HPV 16	100	90	Lifelong	Lifelong
Berchtold 2010	Screening - Conventional	Switzerland	Female	12	N/S	HPV 16/18	100	85	5 years	Lifelong
Boot 2007	Screening - Conventional	Netherlands	Female	10 to 12	N/S	HPV 16/18	80	100	Lifelong	Lifelong
Brisson 2007	Screening - Conventional	Canada	Female	12	100 000	HPV 16/18, HPV 6/11/16/18	95	100	Lifelong	Lifelong
French 2007	Screening - Conventional	Finland	Male, Female	12	N/S	HPV 16	100	70	Lifelong	45 years
Goldie 2004	Screening - Conventional and Liquid Based	United States	Female	12	100 000	HPV 16/18	90	100	Lifelong	Lifelong
Goldie 2008	Screening - Conventional	72 GAVI Alliance Countries; 33 Latin American/Caribbean Countries	Female	12	N/S	HPV 16/18	N/S	70	Lifelong	Lifelong
Hughes 2002	No Program	United States	Male, Female	16	N/S	HPV 16	100	100	Lifelong	Lifelong
Insinga 2007	Screening - Conventional	Mexico	Male, Female	12	100 000	HPV 6/11/16/18	90	70	Lifelong	100 years
Kohli 2007	Screening - Conventional	United Kingdom	Female	12	376385	HPV 16/18	95	100	Lifelong	Lifelong
Kulasingam 2003	Screening - Conventional	United States	Female	12	N/S	HPV 16/18 *	90	100	10 years	73 years
Reynales-	Screening -	Mexico	Female	12	N/S	HPV	95	100	Lifelong	73 years

Shigematsu 2009	Liquid Based					6/11/16/18				
Rogoza 2008	Screening - Conventional	Canada (1), Netherlands (2), Taiwan (3), United Kingdom (4), United States(5)	Female	12	100 000	HPV 16/18	95	100	Lifelong	Lifelong
Sanders 2003	Screening - Conventional	United States	Female	12	1 988 600	HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68	75	70	10 years	Lifelong
Suarez 2008	Screening - Conventional	Chile (1), Finland (2), Ireland (3), Poland (4), Taiwan (5)	Female	11	100 000	HPV 16/18	(1) 69, (2) 77, (3) 77, (4) 75, (5) 75.2	100	10 years	Lifelong
Taira 2004	Screening - Conventional	United States	Male, Female	12	N/S	HPV 6/11/16/18	90	70	10 years	38 years

Abbreviations
N/S = Not Specified
HPV = Human papillomavirus

TABLE 11: FREQUENCY OF MODEL COHORT'S GENDER

Variable		Frequency	Percentage (%)
Gender of Individuals within the Model Cohort	Female	12	75
	Female and Male	4	25
Total		16	100

TABLE 12: MEAN, MEDIAN, MODE, AND RANGE OF THE MODEL COHORT'S AGE

Descriptive Analysis	Variable: Age of Individuals within the Model Cohort
Mean	12.3
Median	12
Mode	12
Range	10 - 16

TABLE 13: FREQUENCY OF THE NUMBER OF INDIVIDUALS WITHIN THE MODEL COHORT

Variable		Frequency	Percentage (%)
Number of Individuals within the Model Cohort	100, 000	5	31.3
	376, 385	1	6.3
	1, 988, 6000	1	6.3
	Not Specified	9	56.3
Total		16	100

TABLE 14: FREQUENCY OF THE COMPARATOR GROUP IN THE DECISION ANALYTIC MODELS

Variable		Frequency	Percentage (%)
Comparator	No Program	1	6.3
	Screening – Conventional Cytology	14	87.5
	Screening – Conventional and Liquid Based Cytology	1	6.3
Total		16	100

TABLE 15: FREQUENCY OF THE SETTING WITHIN THE DECISION ANALYTIC MODELS

Variable		Frequency	Percentage (%)
Setting	Canada	2	8.3
	Chile	1	4.2
	Finland	3	12.5
	Ireland	1	4.2
	Mexico	2	8.3
	Netherlands	2	8.3
	Poland	1	4.2
	Switzerland	1	4.2
	Taiwan	2	8.3
	United Kingdom	2	8.3
	United States	6	25.0
	72 GAVI Alliance and 33 Latin American/Caribbean Countries	1	4.2
Total		24*	100
*two studies conducted five economic evaluations = (16+8)			

TABLE 16: FREQUENCY OF DIFFERENT TIME HORIZONS WITHIN THE DECISION ANALYTIC MODELS

Variable		Frequency	Percentage (%)
Horizon of the Cohort Simulation	38 Years	1	6.3
	73 Years	2	12.5
	100 Years	2	12.5
	Lifelong	11	68.8
Total		16	100

TABLE 17: FREQUENCY OF THE TYPES OF VACCINES WITHIN THE DECISION ANALYTIC MODELS

Variable		Frequency	Percentage (%)
Types of HPV Vaccines	HPV 16	3	18.8
	HPV 16/18	8	50.0
	HPV 6/11/16/18	3	18.8
	HPV 16/18, HPV 6/11/16/18	1	6.3
	HPV 16/18/31/33/35/39/45/51/ 52/56/58/59/68	1	68.8
Total		16	100

TABLE 18: MEAN, MEDIAN, MODE, AND RANGE OF THE VACCINE'S EFFICACY

Descriptive Analysis	Variable: Vaccine's Efficacy (%)
Mean	87.8
Median	90.0
Mode	90.0, 95.0, 100.0 (4 studies each)
Range	69-100

TABLE 19: MEAN, MEDIAN, MODE, AND RANGE OF THE VACCINE'S COVERAGE RATES

Descriptive Analysis	Variable: Vaccine's Coverage Rate (%)
Mean	89.6
Median	100
Mode	100 (9 studies)
Range	70-100

TABLE 20: FREQUENCY OF THE DIFFERENT VACCINE'S DURATION OF PROTECTION

Variable		Frequency	Percentage (%)
Duration of Protection	5 Years	1	6.3
	10 Years	4	25.0
	Lifelong	11	68.8
Total		16	100

TABLE 21: CHARACTERISTICS OF THE ECONOMIC EVALUATIONS

Study	Analytical Framework	Perspective	Types of Cost Included	Currency	Discounting	
					Costs (%)	Benefits (%)
Boot 2007	Cost-Effectiveness	Society	DMC, DNMC, IC	Euro	4	1.5
Brisson 2007	Cost-Utility	Healthcare System	DMC	2005 Canadian Dollars	3	3
Goldie 2004	Cost-Utility	Society	DMC, DNMC, IC	2002 American Dollars	3	3
Goldie 2008	Cost-Effectiveness, Cost-Utility	Healthcare System	DMC, DNMC	International Dollars	N/S	N/S
Insinga 2007	Cost-Utility	Healthcare System	DMC	2005 Mexican Pesos	3	3
Kulasingam 2003	Cost-Effectiveness	Healthcare System	DMC	American Dollars	3	3
Reynales-Shigematsu 2009	Cost-Effectiveness	Healthcare System	DMC	American Dollars	3	3
Rogoza 2008	Cost-Utility	Society(2,5), Healthcare System (1,3,4)	DMC, DNMC, IC (2,5)	1) Canadian Dollars, 2) Euro, 3) New Taiwan Dollars, 4) British Pounds, 5) American Dollars	1) 3, 2) 4, 3) 3, 4) 3.5, 5) 3	1) 3, 2) 1.5, 3) 3, 4) 3.5, 5) 3
Sanders 2003	Cost-Effectiveness, Cost-Utility	Healthcare System	DMC	2001 USD$	3	3
Suarez 2008	Cost-Effectiveness, Cost-Utility	Healthcare System	DMC	1) Chilean Pesos, 2) Euro , 3) Euro, 4) Polish Zloty, 5) New Taiwan Dollars	1) 3, 2) 3, 3) 3.5, 4) 3.5, 5) 3	1) 3, 2) 1.5, 3) 3.5, 4) 3.5, 5) 1.5
Taira 2004	Cost-Effectiveness, Cost-Utility	Healthcare System	DMC	2001 American Dollars	3	3

Abbreviations:
DMC = Direct Medical Costs, DNMC = Direct Non-Medical Costs, IC = Indirect Costs
Notes: *Sanders 2003* = (1) Canada, (2) Netherlands, (3) Taiwan, (4) United Kingdom, (5) United States / *Suarez 2004* = (1) Chile, (2) Finland, (3) Ireland, (4) Poland, (5) Taiwan

TABLE 22: FREQUENCY OF THE ANALYTICAL FRAMEWORK OF THE ECONOMIC EVALUATIONS

Variable		Frequency	Percentage (%)
Analytic Framework of the Economic Evaluation	Cost-Effectiveness	3	27.3
	Cost-Utility	4	36.4
	Cost-Effectiveness and Cost-Utility	4	36.4
Total		16	100

TABLE 23: FREQUENCY OF THE PERSPECTIVE OF THE ECONOMIC EVALUATIONS

Variable		Frequency	Percentage (%)
Perspective taken by the Economic Evaluation	Healthcare System	15	78.9
	Society	4	21.2
Total		19*	100
*two studies conducted five economic evaluations			

TABLE 24: FREQUENCY OF THE DIFFERENT TYPES OF COSTS INCLUDED IN THE ECONOMIC EVALUATIONS

Variable		Frequency	Percentage (%)
Types of Costs Included	Direct Medical Costs	11	57.9
	Direct Medical and Non-Medical Costs	4	21.1
	Direct Medical and Non-Medical Costs, Indirect Costs	4	21.1
Total		19*	100
*two studies conducted five economic evaluations			

TABLE 25: FREQUENCY OF THE DIFFERENT CURRENCIES INCLUDED IN THE ECONOMIC EVALUATIONS

Variable		Frequency	Percentage (%)
Different Currencies	American Dollar	6	31.6
	British Pound	1	5.3
	Canadian Dollar	2	10.5
	Chilean Peso	1	5.3
	Euro	4	21.1
	International Dollar	1	5.3
	Mexican Peso	1	5.3
	New Taiwan Dollar	2	10.5
	Polish Zloty	1	5.3
Total		19*	100
*two studies conducted five economic evaluations			

TABLE 26A: MEAN, MEDIAN, MODE, AND RANGE OF THE DISCOUNTING RATES – COSTS AND BENEFITS

Descriptive Analysis	Cost Discounting Rates (%)	Benefits Discounting Rates (%)
Mean	3.08	2.65
Median	3	3
Mode	3	3
Range	1-4	1-3.5

TABLE 26B: FREQUENCY OF THE DIFFERENT DISCOUNTING RATES – COSTS

Variable		Frequency	Percentage (%)
Discounting Rates – Cost	3.0%	13	68.4
	3.5%	3	15.8
	4.0%	2	10.5
	Non-Specified	1	5.3
Total		19*	100
*2 studies conducted five economic evaluations			

TABLE 26C: FREQUENCY OF THE DIFFERENT DISCOUNTING RATES – BENEFITS

Variable		Frequency	Percentage (%)
Discounting Rates – Benefits	1.5%	4	21.1
	3.0%	11	57.9
	3.5%	3	15.8
	Non-Specified	1	5.3
Total		19*	100
*2 studies conducted five economic evaluations			

TABLE 27: THE TYPES AND NUMBER OF UNCERTAINTY FROM DECISION ANALYTIC MODELS

Study	Types of Uncertainty	Number of Uncertainty
Barnabas 2006	Duration of Protection	1
Berchtold 2010	Duration of Protection	1
Boot 2007	Duration of Protection, Cross Protection	2
Brisson 2007	Duration of Protection, Cost	2
French 2007	Duration of Protection	1
Goldie 2004	Duration of Protection	1
Goldie 2008	Duration of Protection, Age, Coverage, Cost	4
Hughes 2002	Efficacy, Coverage	2
Insinga 2007	Duration of Protection, Coverage	2
Kohli 2007	Age, Coverage	2
Kulasingam 2003	Duration of Protection, Age	2
Reynales-Shigematsu 2009	Duration of Protection, Age, Cost	3
Rogoza 2008	Cost, Coverage	2
Sanders 2003	Duration of Protection, Cost	2
Suarez 2008	Duration of Protection, Efficacy, Cost, Cross Protection	4
Taira 2004	Duration of Protection, Efficacy, Cost	3

TABLE 28: FREQUENCY OF DIFFERENT TYPES OF UNCERTAINTY

Variable		Frequency	Percentage (%)
Types of Uncertainty	Age	4	11.8
	Cost	7	20.6
	Coverage	5	14.7
	Cross Protection	2	5.9
	Duration of Protection	13	38.2
	Efficacy	3	8.8
Total		34	100

TABLE 29: MEAN, MEDIAN, MODE, AND RANGE OF THE NUMBER OF DIFFERENT TYPES OF UNCERTAINTIES

Descriptive Analysis	Number of Different Types of Uncertainties
Mean	2.13
Median	2
Mode	2
Range	1-4

TABLE 30: THE FINAL RECOMMENDATION AND THEIR RESPECTIVE CONFIDENCE RATINGS

Study	Final Recommendation	Confidence Rating
Barnabas 2006	Pro Implementation	4.5
Berchtold 2010	Pro Implementation	5.5
Boot 2007	Neither Pro Nor Against	N/A
Brisson 2007	Pro Implementation	7
French 2007	Neither Pro Nor Against	N/A
Goldie 2004	Pro Implementation	6
Goldie 2008	Neither Pro Nor Against	N/A
Hughes 2002	Neither Pro Nor Against	N/A
Insinga 2007	Pro Implementation	7
Kohli 2007	Pro Implementation	7
Kulasingam 2003	Neither Pro Nor Against	N/A
Reynales-Shigematsu 2009	Pro Implementation	7
Rogoza 2008	Pro Implementation	5
Sanders 2003	Pro Implementation	7
Suarez 2008	Pro Implementation	6.5
Taira 2004	Pro Implementation	7

TABLE 31: FREQUENCY OF THE DIFFERENT FINAL RECOMMENDATIONS

Variable		Frequency	Percentage (%)
Final Recommendation of the Primary Author	Pro Implementation	11	68.8
	Neither Pro not Against	5	31.3
Total		16	100

TABLE 32: MEAN, MEDIAN, MODE, AND RANGE OF THE CONFIDENCE RATING

Descriptive Analysis	Confidence Rating
Mean	6.31
Median	7
Mode	7
Range	4.5 - 7

TABLE 33: REVIEWER AGREEMENT – QUANTITATIVE QUALITY APPRAISAL

	Number of		Percentage (%) of	
	Agreements	Disagreements	Agreements	Disagreements
Report Introduction				
Epidemiology and Treatment	14	2	87.5	12.5
Prognosis	8	8	50	50
Disease Progression	4	12	25	75
Local Treatment Pattern	4	12	25	75
Economic Impact	2	14	12.5	87.5
Study Drug	13	3	81.25	18.75
Hypothesis	1	15	6.25	93.75
Objectives	16	0	100	0
Design				
Analytical Framework	16	0	100	0
Patient Population	16	0	100	0
Comparator	15	1	93.75	6.25
Analytical Horizon	14	2	87.5	12.5
Perspective	15	1	93.75	6.25
Setting	14	2	87.5	12.5
Clinical Measures	3	13	18.75	81.25
Effectiveness Measures	15	1	93.75	6.25
Economic Measures	14	2	87.5	12.5
Methods				
Healthcare System	11	5	68.75	31.25
Model Description	15	1	93.75	6.25
Data Sources	14	2	87.5	12.5
Data Collection	5	11	31.25	68.75
Probabilities	10	6	62.5	37.5
Healthcare Use	10	6	62.5	37.5
Data Analysis	3	13	18.75	81.25
Sensitivity Analysis	14	2	87.5	12.5
Discounting	14	2	87.5	12.5
Results				
Intermediate Results	2	14	12.5	87.5
Final Results	16	0	100	0
Conclusion	16	0	100	0
Discussion	14	2	87.5	12.5
Validation and Quality Control				
Validation	13	3	81.25	18.75
Quality Control	16	0	100	0
Software	14	2	87.5	12.5
Relationships	15	1	93.75	6.25
Appendices	15	1	93.75	6.25

TABLE 34: RESULTS OF THE QUANTITATIVE QUALITY APPRAISAL

	Number of Criteria				Percentage (%) of Criteria			
	Covered	Not Covered	Unclear	Non-Applicable	Covered	Not Covered	Unclear	Non-Applicable
Report Introduction								
Epidemiology and Treatment	14	1	1	0	87.5	6.25	6.25	0
Prognosis	8	5	3	0	50	31.25	18.75	0
Disease Progression	4	10	2	0	25	62.5	12.5	0
Local Treatment Pattern	4	11	1	0	25	68.75	6.25	0
Economic Impact	2	14	0	0	12.5	87.5	0	0
Study Drug	13	0	3	0	81.25	0	18.75	0
Hypothesis	1	15	0	0	6.25	93.75	0	0
Objectives	16	0	0	0	100	0	0	0
Design								
Analytical Framework	11	0	0	5	68.75	0	0	31.25
Patient Population	16	0	0	0	100	0	0	0
Comparator	16	0	0	0	100	0	0	0
Analytical Horizon	16	0	0	0	100	0	0	0
Perspective	11	0	0	5	68.75	0	0	31.25
Setting	16	0	0	0	100	0	0	0
Clinical Measures	5	10	1	0	31.25	62.5	6.25	0
Effectiveness Measures	15	1	0	0	93.75	6.25	0	0
Economic Measures	11	0	0	5	68.75	0	0	31.25
Methods								
Healthcare System	8	2	0	6	50	18.75	0	31.25
Model Description	15	0	1	0	93.75	0	6.25	0
Data Sources	15	0	1	0	93.75	0	6.25	0
Data Collection	12	3	1	0	75	18.75	6.25	0
Probabilities	12	1	3	0	75	6.25	18.75	0
Healthcare Use	9	1	1	5	56.25	6.25	6.25	31.25

	Data Analysis	14	0	2	0	87.5	0	12.5	0
	Sensitivity Analysis	11	1	0	4	68.75	6.25	0	25
	Discounting	10	1	0	5	62.5	6.25	0	31.25
Results									
	Intermediate Results	3	13	0	0	18.75	81.25	0	0
	Final Results	16	0	0	0	100	0	0	0
Conclusion		16	0	0	0	100	0	0	0
Discussion		15	0	1	0	93.75	0	6.25	0
Validation and Quality Control									
	Validation	6	9	1	0	37.5	56.25	6.25	0
	Quality Control	0	16	0	0	0	100	0	0
	Software	4	11	1	0	25	68.75	6.25	0
Relationships		13	3	0	0	81.25	18.75	0	0
Appendices		6	10	0	0	37.5	62.5	0	0

TABLE 35: PRESENCE OF UNCERTAINTY AND FINAL DECISION

Type and Presence of Uncertainty		Decision	
Type	# Times Cited	Neither Pro or Against	Pro Implementation
Age of Vaccination	4	2	2
Cost of Vaccination	7	1	6
Vaccine Coverage	5	2	3
Cross Protection	2	1	1
Duration of Protection	13	4	9
Efficacy of Vaccine	3	1	2

TABLE 36: CHARACTERISTICS OF INCLUDED QUALITATIVE STUDIES

Primary Author	Year	Geographical Setting	Time Period	Sampling Method	Sample Size	Data Collection	Data Analysis
Colgrove	2010	United States (California, Indiana, New Hampshire, New York, Texas, and Virginia)	August 2008 to May 2009	Purposive and Snow-Ball	73	Face to face and telephone interviews; individual and group	Content analysis
Harries	2009	Western Cape Province, South Africa	February 2007 to March 2008	Purposive and Snow-Ball	26	Face-to-face interviews; individual	Content analysis
Pineros	2010	4 Colombian cities: Bogota, Manizales, Arauca, and Cartagena	February 2008 to August 2008	Purposive	14	Face-to-face interviews; individual	Content analysis
Tsui	2009	India (Andhra Pradesh state: Khammam district; Gurjarat state: Vadodara district), Peru (Ayacucho, Piura, Ucayali regions and Lima, a large metropolitan area), Uganda (Gulu, Kampala, Masaka, Mbarara, Soroti districts) and Vietnam (Dong Thap, Nghe An, Thai Binh provinces and Hanoi and Ho Chi Minh City metropolitan areas)	2006 to 2008	Purposive	237	In-depth interviews and desk reviews	Content analysis

TABLE 37: CHARACTERISTICS OF THE PARTICIPANTS BY STUDY

Study	**Participants recruited from…**	
Colgrove 2010	• Legislators • Public health officials • Medical professional organizations • Advocacy organizations focusing on cancer, women's issues, youth issues, religious or "family" values, vaccine safety, vaccination benefits, and civil liberties • Healthinsurers • Representatives of Merck including local political consultants	
Harries 2009	• Policy makers • Managers with non-governmental organizations • Academics • Clinicians	
Pineros 2010	• General health secretaries • Directors of public health divisions • Coordinators of sexual and reproductive health programs • Coordinators of the expanded immunization programs	
Tsui 2009	India	• Local, state, and national policy-makers • Policy and project implementers
	Peru	• Local, regional, and national governmental representatives
	Uganda	• District and national policymakers
	Vietnam	• Health and education personnel at the provincial evel

TABLE 38: REVIEWER AGREEMENT – QUALITATIVE REPORTING GUIDELINE

	Number of		Percentage (%) of	
	Agreements	Disagreements	Agreements	Disagreements
Domain 1: Research Team and Reflexivity				
Personal Characteristics				
1. Interviewer/Facilitator	3	1	75	25
2. Credentials	3	1	75	25
3. Occupation	3	1	75	25
4. Gender	4	0	100	0
5. Experience and Training	3	1	75	25
Relationship with Participants				
6. Relationship Established	3	1	75	25
7. Participant Knowledge of the Interviewer	3	1	75	25
8. Interviewer Characteristics	1	3	25	75
Domain 2: Study Design				
Theoretical Framework				
9. Methodological Orientation and Theory	1	3	25	75
Participant Selection				
10. Sampling	3	1	75	25
11. Method of Approach	3	1	75	25
12. Sample Size	4	0	100	0
13. Non-Participation	2	2	50	50
Setting				
14. Setting of Data Collection	4	0	100	0
15. Presence of Non-Participants	1	3	25	75
16. Description of Sample	1	3	25	75
Data Collection				
17. Interview Guide	1	3	25	75
18. Repeat Interviews	4	0	100	0
19. Audio/Visual Recording	3	1	75	25
20. Field Notes	1	3	25	75
21. Duration	4	0	100	0
22. Data Saturation	4	0	100	0
23. Transcripts Returned	4	0	100	0
Domain 3: Analysis and Findings				
Data Analysis				
24. Number of Data Coders	1	3	25	75
25. Description of the Coding Tree	4	0	100	0
26. Derivation of Themes	2	2	50	50

		27. Software	4	0	100	0
		28. Participant Checking	2	2	50	50
	Reporting					
		29. Quotations Presented	4	0	100	0
		30. Data and Finding Consistent	4	0	100	0
		31. Clarity of Major Themes	4	0	100	0
		32. Clarity of Minor Themes	4	0	100	0

TABLE 39: RESULTS OF THE REPORTING GUIDELINE – QUALITATIVE STUDIES

	Number of Criteria			Percentage (%) of Criteria		
	Covered	Not Covered	Unclear	Covered	Not Covered	Unclear
Domain 1: Research Team and Reflexivity						
Personal Characteristics						
1. Interviewer/Facilitator	0	4	0	0	100	0
2. Credentials	0	3	1	0	75	25
3. Occupation	0	4	0	0	100	0
4. Gender	0	4	0	0	100	0
5. Experience and Training	0	4	0	0	100	0
Relationship with Participants						
6. Relationship Established	0	4	0	0	100	0
7. Participant Knowledge of the Interviewer	0	4	0	0	100	0
8. Interviewer Characteristics	0	4	0	0	100	0
Domain 2: Study Design						
Theoretical Framework						
9. Methodological Orientation and Theory	4	0	0	100	0	0
Participant Selection						
10. Sampling	4	0	0	100	0	0
11. Method of Approach	2	2	0	50	50	0
12. Sample Size	4	0	0	100	0	0
13. Non-Participation	1	3	0	25	75	0
Setting						
14. Setting of Data Collection	0	4	0	0	100	0
15. Presence of Non-Participants	2	2	0	50	50	0
16. Description of Sample	1	0	3	25	0	75
Data Collection						
17. Interview Guide	4	0	0	100	0	0
18. Repeat Interviews	0	4	0	0	100	0
19. Audio/Visual Recording	3	1	0	75	25	0
20. Field Notes	2	2	0	50	50	0
21. Duration	2	2	0	50	50	0
22. Data Saturation	0	4	0	0	100	0

		23. Transcripts Returned	0	4	0	0	100	0
Domain 3: Analysis and Findings								
	Data Analysis							
		24. Number of Data Coders	2	1	1	50	25	25
		25. Description of the Coding Tree	0	4	0	0	100	0
		26. Derivation of Themes	2	1	1	50	25	25
		27. Software	1	3	0	25	75	0
		28. Participant Checking	1	3	0	25	75	0
	Reporting							
		29. Quotations Presented	4	0	0	100	0	0
		30. Data and Finding Consistent	4	0	0	100	0	0
		31. Clarity of Major Themes	4	0	0	100	0	0
		32. Clarity of Minor Themes	4	0	0	100	0	0

TABLE 40: TYPES OF UNCERTAINTY – 2ND ORDER CONSTRUCTS

Each concept starts with 'uncertainty regarding…'

TH	SG	Final Agreed Upon Concepts
Colgrove 2010		
Long-term safety	Newness of the vaccine	Long-term safety
Vaccine against an STI (sexual activity, classroom)	Sexually transmitted nature of HPV	Vaccine against an STI
Manufacturer's role	Discomfort with the manufacturer's role	Manufacturer's Role
Cost	Price of the vaccine	Cost
Harries 2009		
HPV types included		HPV types included
Gender of recipients (cost/delivery)	Immunizing boys	Gender of recipients
Delivery of vaccine	Distribution and service delivery strategies	Delivery of vaccine
	Vaccine cost	Cost
Manufacturer's role	Pharma companies	Manufacturer's role
Vaccine against an STI	HPV as an STI	Vaccine against an STI
	Safety and efficacy	Safety and efficacy
Pineros 2010		
	Need for HPV vaccine	Need for HPV vaccine
Manufacturer's role		Manufacturer's role
Efficacy		Efficacy
Cost resulting in inequity	Cost	Cost resulting in inequity
	Age of vaccination	
Tsui 2009		
Safety and efficacy	Safety and efficacy	Safety and efficacy
Cost – price of vaccine	Cost	Cost
	Implementation and monitoring	Implementation and monitoring
Duration of protection		Duration of protection
Acceptability	Social concerns	Acceptability

TABLE 41: RECIPROCAL TRANSLATION – 3RD ORDER CONSTRUCTS

Each concept starts with 'Uncertainty regarding…'

Tsui 2009	Harries 2009	Pineros 2010	Colgrove 2010
Safety and efficacy (3)	HPV types included (3)	Need for HPV vaccine (4)	Long-term safety (3)
Cost (4)	Gender of recipients (4, 5)	Manufacturer's role (2)	Vaccine against an STI (1)
Implementation and monitoring (4)	Delivery of vaccine (5)	Efficacy (3)	Manufacturer's Role (2)
Duration of protection (3)	Cost (4)	Cost resulting in inequity (4)	Cost (4)
Acceptability (1)	Manufacturer's role (2)		
	Vaccine against an STI (1)		
	Safety and efficacy (3)		
Public Acceptance of the Vaccine (1)			
Manufacturer's Intentions and Motives (2)*			
Vaccine Characteristics (3)			
Cost (4)			
Method of Delivery (5)			
Public Acceptance of the Vaccine (1)			
Manufacturer's Intentions and Motives (2)			
Vaccine Characteristics (3)			
System's Ability to Support the Vaccine (cost and method of delivery) (4)			
Public Acceptance of the Vaccine (1)			
Manufacturer's Intentions and Motives (2)			
Vaccine Characteristics (3)			
System's Ability to Support the Vaccine (4)			

FIGURES

FIGURE 1: THE DEVELOPMENT OF THE ORIGINAL SEARCH STRATEGY

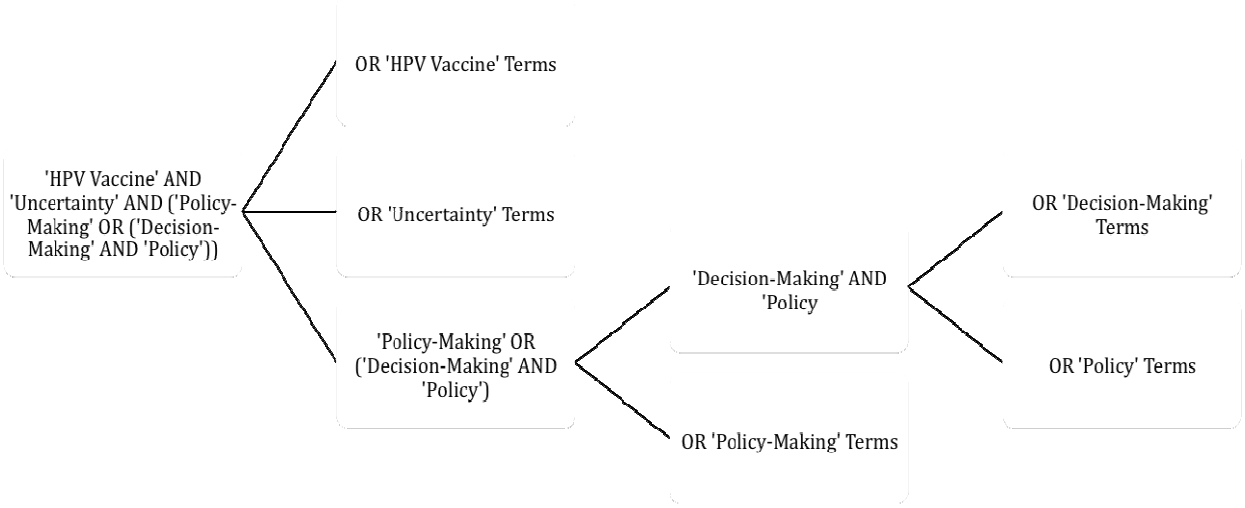


FIGURE 2: THE DEVELOPMENT OF THE QUALITATIVE SEARCH STRATEGY

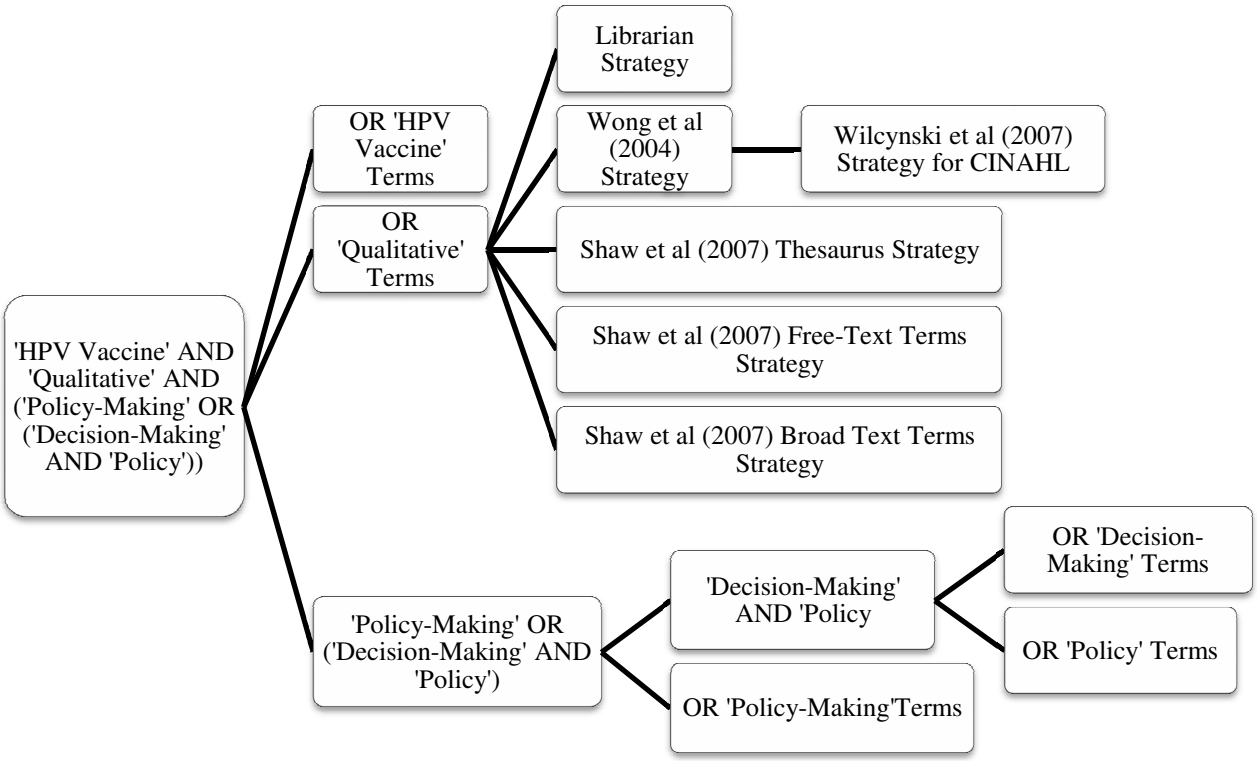


FIGURE 3: SCREENING PROCESS FOR THE ORIGINAL SEARCH STRATEGY RESULTS

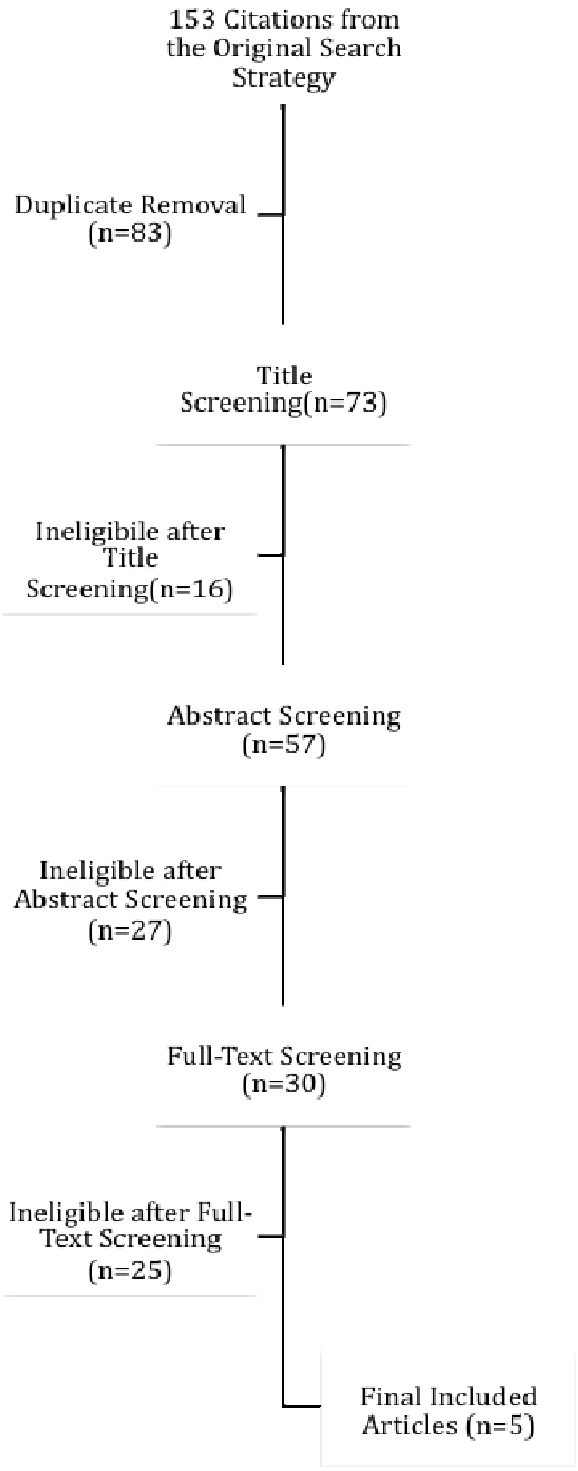


FIGURE 4: SCREENING PROCESS FOR THE QUALITATIVE SEARCH STRATEGY RESULTS

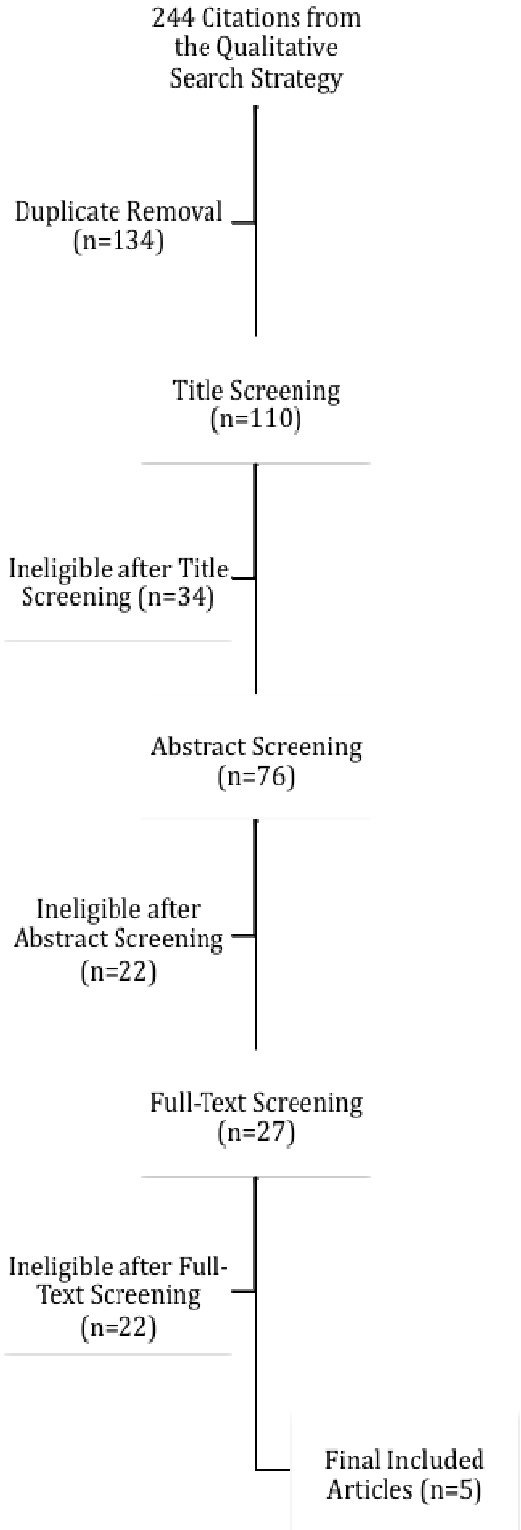


FIGURE 5: SCREENING PROCESS OF RESULTS FROM ADDITIONAL SEARCH TACTICS

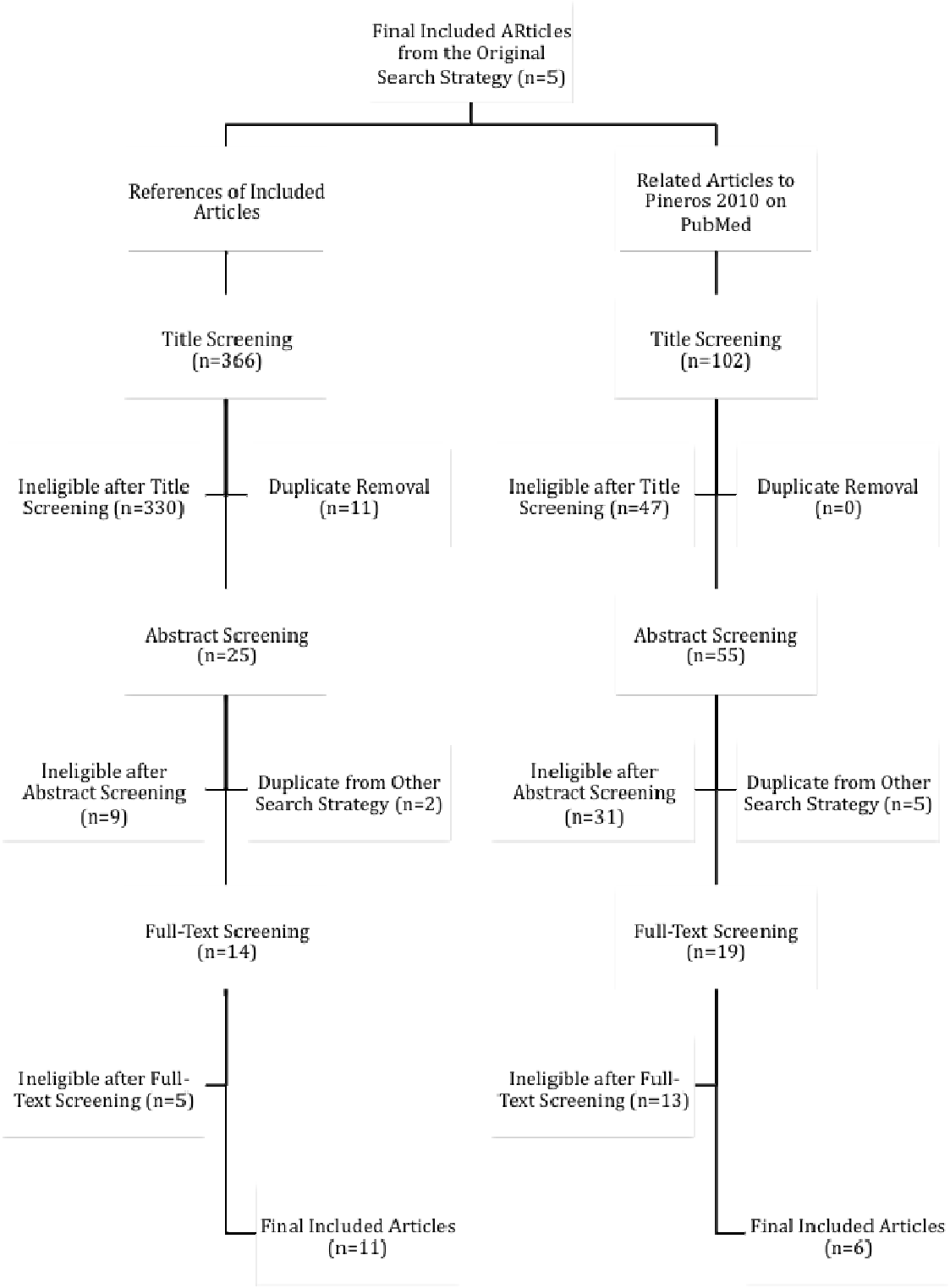


FIGURE 6: FINAL LINE OF ARGUMENT: LOOP OF UNCERTAINTY SPECIFIC TO THE HPV VACCINE

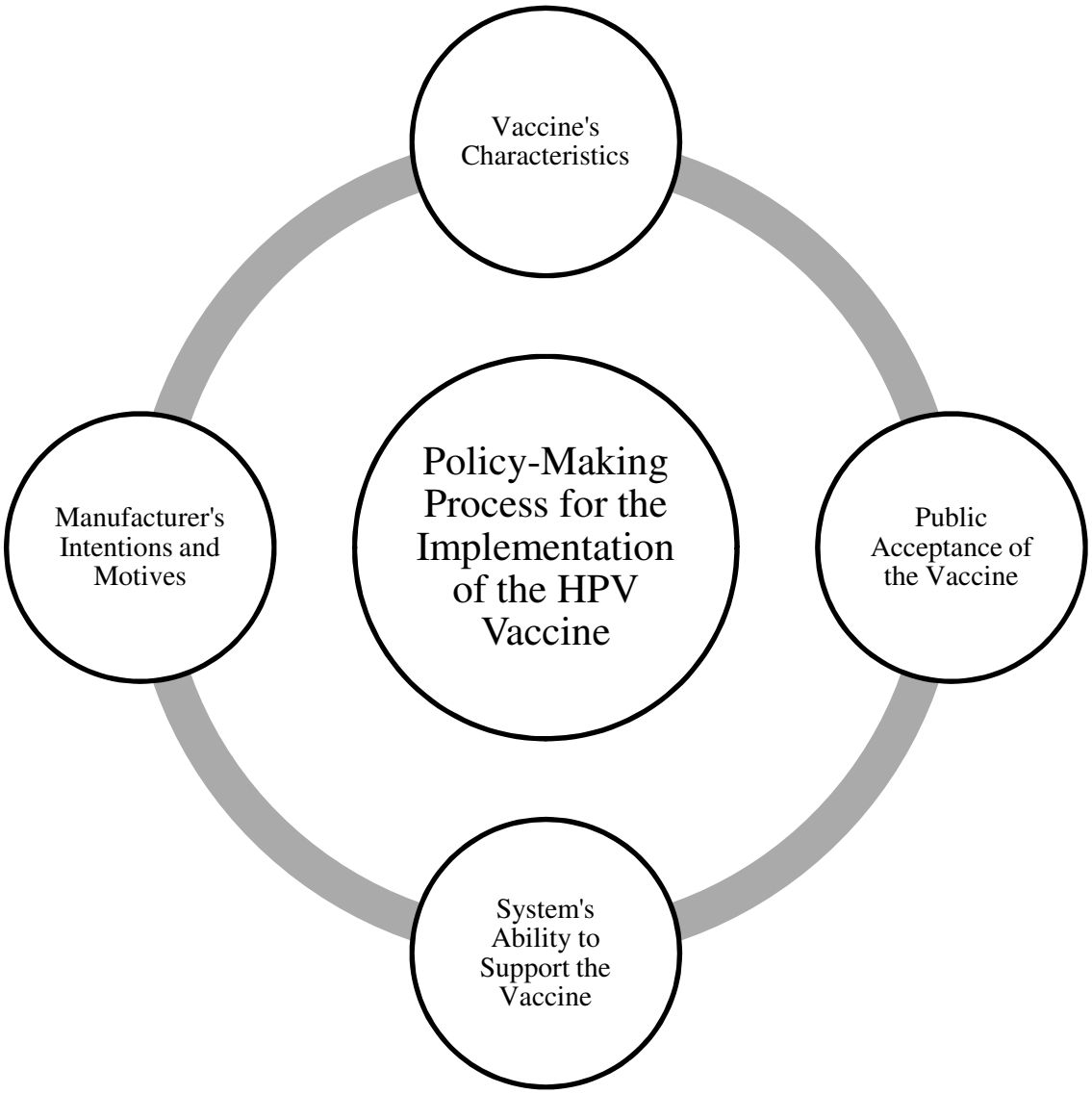


FIGURE 7: FINAL LINE OF ARGUMENT – LOOP OF UNCERTAINTY IN THE POLICY-MAKING PROCESS IN GENERAL

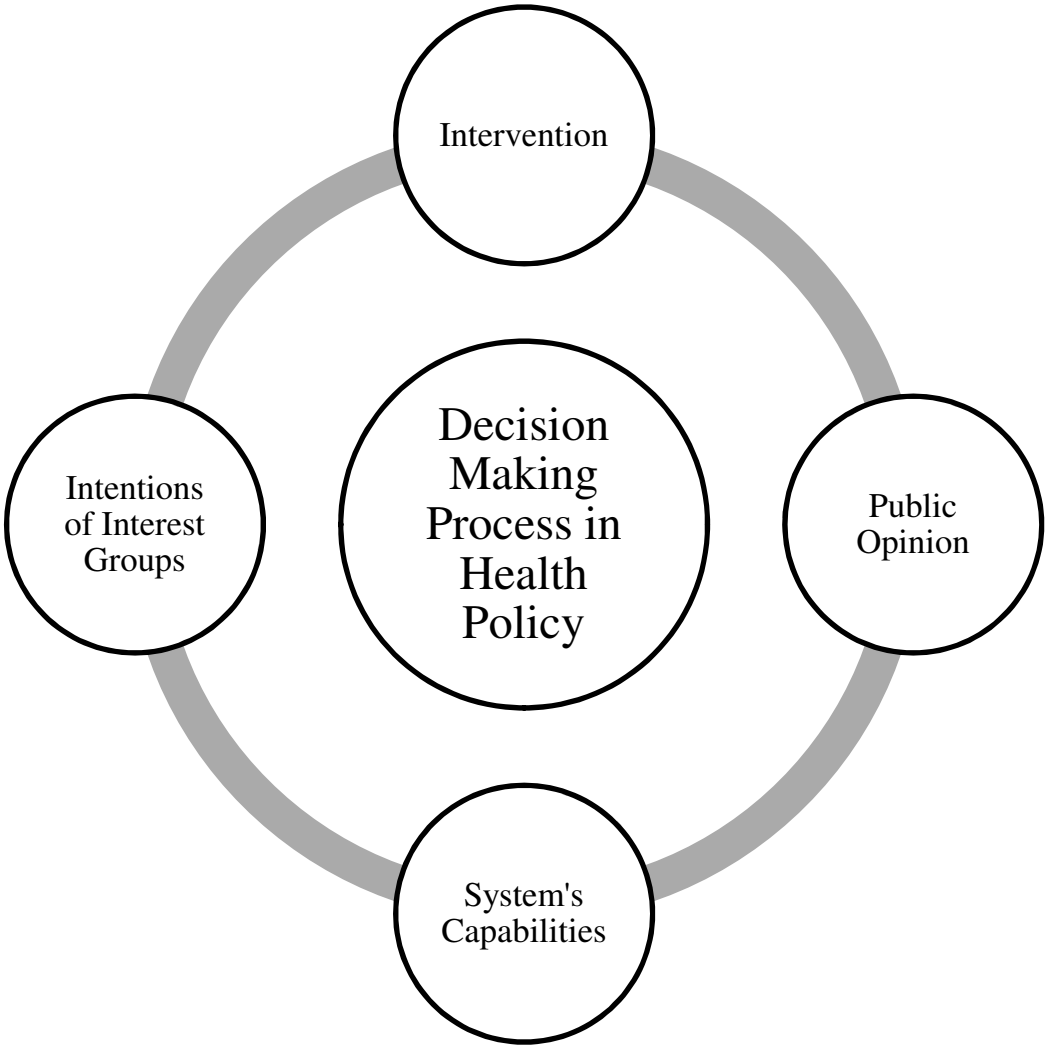
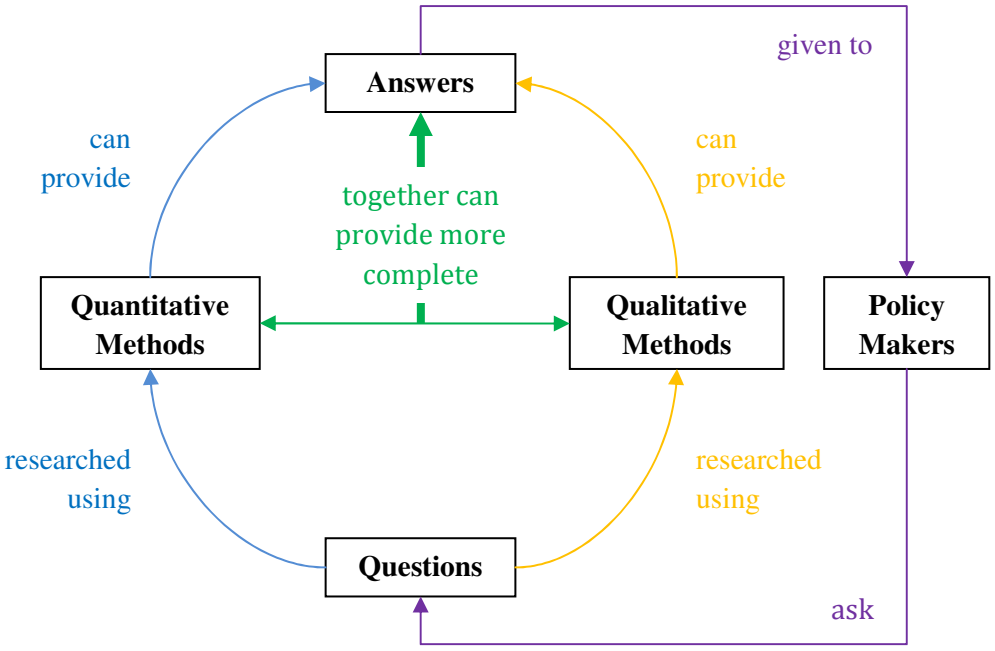


FIGURE 8: ROLE OF QUANTITATIVE AND QUALITATIVE RESEARCH IN HEALTH POLICY



APPENDICES

APPENDIX 1 – DETAILED ORIGINAL SEARCH STRATEGIES BY DATABASE

MEDLINE

1. Papillomavirus Vaccines/
2.(Papilloma virus adj25 OR vaccin*).mp.
3. (Papillomavirus adj25 vaccin*).mp.
4. (Human papilloma virus adj25 vaccin*).mp.
5. (Human papillomavirus adj25 vaccin*).mp.
6. (Hpv* adj25 vaccin*).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. UNCERTAINTY/
31. uncertain*.mp.
32. doubt*.mp.
33. ambigu*.mp.
34. Risk Assessment/
35. Risk/
36. (risk* adj5 assess*).mp.
37. (risk* adj5 communicat*).mp.
38. risk*.mp.
39. or/30-38
40. 26 or 29

41. 9 and 39 and 40

EMBASE

1. Wart virus vaccine/
2. (Papillomavirus adj25 vaccin*).mp.
3. (Papilloma virus adj25 vaccin*).mp.
4. (Human papillomavirus adj25 vaccin*).mp.
5. (Hpv* adj25 vaccin*).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. UNCERTAINTY/
30. uncertain*.mp.
31. doubt*.mp.
32. ambigu*.mp.
33. risk assessment/
34. risk/
35. risk*.mp.
36. (risk* adj5 assess*).mp.
37. (risk* adj5 communicat*).mp.
38. or/29-37
39. Policy Making/
40. Polic* mak*.mp.
41. 39 or 40
42. 28 or 41
43. 9 and 38 and 42

HEALTHSTAR

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 vaccin*).mp.
3. (Papilloma virus adj25 vaccin*).mp.
4. (human papilloma virus adj25 vaccin*).mp.
5. (human papillomavirus adj25 vaccin*).mp.
6. (Hpv* adj25 vaccin*).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. Uncertainty/
32. uncertain*.mp.
33. doubt*.mp.
34. ambigu*.mp.
35. Risk/
36. risk*.mp.
37. Risk Assessment/
38. (risk* adj5 assess*).mp.
39. (risk* adj5 communicat*).mp.
40. or/31-39
41. 9 and 30 and 40

PSYCINFO

1. exp Immunization/
2. (Papillomavirus adj25 vaccin*).mp.
3. (Papilloma virus adj25 vaccin*).mp.
4. (Human papillomavirus adj25 vaccin*).mp.
5. (Hpv* adj25 vaccin*).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 vaccin*).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. exp Uncertainty/
32. uncertain*.mp.
33. doubt*.mp.
34. ambigu*.mp.
35. Risk Assessment/
36. risk*.mp.
37. (risk* adj5 assess*).mp.
38. (risk* adj5 communicat*).mp.
39. or/31-38
40. 9 and 30 and 39

GLOBAL HEALTH

1. (Papilloma virus adj25 vaccin*).mp.
2. (Papillomavirus adj25 vaccin*).mp.
3. (Human papilloma virus adj25 vaccin*).mp.
4. (Human papillomavirus adj25 vaccin*).mp.
5. (Hpv* adj25 vaccin*).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. uncertainty/
30. uncertain*.mp.
31. doubt*.mp.
32. ambigu*.mp.
33. Risk/
34. risk*.mp.
35. Risk Assessment/
36. (risk* adj5 assess*).mp.
37. (risk* adj5 communicat*).mp.
38. or/29-37
39. 9 and 28 and 38

WEB OF SCIENCE

1. TS=papillomavirus vaccine
2. TS=(Papilloma virus vaccin*)
3. TS=(Papillomavirus vaccin*)
4. TS=(human papilloma virus vaccin*)
5. TS=(human papillomavirus vaccin*)
6. TS=(hpv* vaccin*)
7. TS=(Gardasil*)
8. TS=(Cervarix*)
9. #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
10. TS=policies*
11. TS=policy*
12. TS=(health polic*)
13. TS=(healthcare polic*)
14. TS=(health care polic*)
15. #14 OR #13 OR #12 OR #11 OR #10
16. TS=(decision mak*)
17. TS=(decision* process*)
18. TS=(decision*)
19. TS=(judgement*)
20. TS=(judgment*)
21. #20 OR #19 OR #18 OR #17 OR #16
22. #21 AND #15
23. TS=(uncertain*)
24. TS=(doubt*)
25. TS=(ambigu*)
26. TS=(risk* assess*)
27. TS=(risk* communicat*)
28. TS=(risk*)
29. #28 OR #27 OR #26 OR #25 OR #24 OR #23
30. TS=(polic* mak*)
31. #30 OR #22
32. #31 AND #29 AND #9

CINAHL

MW papilloma virus vaccin* or TI papilloma virus vaccin* or AB papilloma virus vaccin* [6]
MW papilloma virus immun* or TI papilloma virus immun* or AB papilloma virus immun* [0]
MW Papillomavirus vaccin* or TI Papillomavirus vaccin* or AB Papillomavirus vaccin* [1012]
MW Papillomavirus immun* or TI Papillomavirus immun* or AB Papillomavirus immun* [5]
MW human papilloma virus vaccin* or TI human papilloma virus vaccin* or AB human papilloma virus vaccin* [6]
MW human papilloma virus immun* or TI human papilloma virus immun* or AB human papilloma virus immun* [0]
MW human papillomavirus vaccin* or TI human papillomavirus vaccin* or AB human papillomavirus vaccin* [217]
MW human papillomavirus immun* or TI human papillomavirus immun* or AB human papillomavirus immun* [5]
MW hpv* vaccin* or TI hpv* vaccin* or AB hpv* vaccin* [577]
MW hpv* immun* or TI hpv* immun* or AB hpv* immun* [20]
MW Gardasil* or TI Gardasil* or AB Gardasil*
MW Cervarix* or TI Cervarix* or AB Cervarix*
(S1 or S2 or S3 or S4 or S5 or S6 or S7)
MW policies* or TI policies* or AB policies*
MW policy* or TI policy* or AB policy*
MW health polic* or TI health polic* or AB health polic*
MW healthcare polic* or TI healthcare polic* or AB healthcare polic*
MW health care polic* or TI health care polic* or AB health care polic*
S9 or S10 or S11 or S12 or S13
MW decision mak* or TI decision mak* or AB decision mak*
MW decision* process* or TI decision* process* or AB decision* process*
MW decision* or TI decision* or AB decision*
MW judgement* or TI judgement* or AB judgement*
MW judgment* or TI judgment* or AB judgment*
(S15 OR S16 OR S17 OR S18 OR S19)
(S14 AND S20)
MW polic* mak* or TI polic* mak* or AB polic* mak*
(S21 OR S22)
MW uncertain* or TI uncertain* or AU uncertain*
MW doubt* or TI doubt* or AU doubt*
MW ambigu* or TI ambigu* or AU ambigu*
MW risk* assess* or TI risk* assess* or AU risk* assess*
MW risk* communicat* or TI risk* communicat* or AU risk* communicat*
MW risk* or TI risk* or AU risk*
S24 or S25 or S26 or S27 or S28 or S29
(S8 and S23 and S30)

SOCIOLOGICAL ABSTRACTS

(KW=((Papilloma virus vaccin*) or (Papillomavirus vaccin*) or (human papilloma virus vaccin*)) or KW=((human papillomavirus vaccin*) or (hpv* vaccin*) or Gardasil*) or KW=Cervarix*)AND (((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision*process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*))) AND (KW=(uncertain* or doubt* or ambigu*) or KW=((risk* assess*) or (risk* communicat*) or (risk*))

SCOPUS

((TITLE-ABS-KEY(papillomavirusvaccin*)) OR (TITLE-ABS-KEY(papillomavirusvaccin*)) OR (TITLE-ABS-KEY(humanpapillomavirusvaccin*)) OR (TITLE-ABS-KEY(humanpapillomavirusvaccin*)) OR (TITLE-ABS-KEY(hpv*vaccin*)) OR (TITLE-ABS-KEY(gardasil*)) OR (TITLE-ABS-KEY(cervarix*))) AND ((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(healthpolic*)) OR (TITLE-ABS-KEY(healthcarepolic*)) OR (TITLE-ABS-KEY(healthcarepolic*))) AND ((TITLE-ABS-KEY(decisionmak*)) OR (TITLE-ABS-KEY(decision*process*)) OR (TITLE-ABS-KEY(decision*)) OR (TITLE-ABS-KEY(judgement*)) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic*mak*)))AND((TITLE-ABS-KEY(uncertain*)) OR (TITLE-ABS-KEY(doubt*)) OR (TITLE-ABS-KEY(ambigu*)) OR (TITLE-ABS-KEY(risk*assess*)) OR (TITLE-ABS-KEY(risk*communicat*)) OR (TITLE-ABS-KEY(risk*)))

APPENDIX 2 – DETAILED QUALITATIVE SEARCH STRATEGIES BY DATABASE

MEDLINE – LIBRARIAN STRATEGY

1. Papillomavirus Vaccines/
2. (Papilloma virus adj25 (immun* or vaccin*)).mp.
3. (Papillomavirus adj25 (immun* or vaccin*)).mp.
4. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. 26 or 29
31. qualitative research/
32. (qualitative* adj10 research*).mp.
33. health care surveys/ or interviews as topic/ or focus groups/ or narration/ or questionnaires/ or self report/
34. survey*.mp.
35. interview*.mp.
36. focus group*.mp.
37. questionnaire*.mp.
38. experienc*.mp.
39. theme*.mp.
40. 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
41. 9 and 30 and 40

MEDLINE – WONG ET AL. (2004) STRATEGY

1. Papillomavirus Vaccines/
2. (Papilloma virus adj25 (immun* or vaccin*)).mp.
3. (Papillomavirus adj25 (immun* or vaccin*)).mp.
4. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. 26 or 29
31. (interview* or experience*).mp. or qualitative.tw.
32. 9 and 30 and 31

MEDLINE – SHAW ET AL. (2007) THESAURUS STRATEGY

1. Papillomavirus Vaccines/
2. (Papilloma virus adj25 (immun* or vaccin*)).mp.
3. (Papillomavirus adj25 (immun* or vaccin*)).mp.
4. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. 26 or 29
31. Qualitative Research/
32. Nursing Methodology Research/
33. Questionnaires/
34. exp Attitude/
35. Focus Groups/
36. discourse analysis.mp.
37. content analysis.mp.
38. ethnographic research.mp.
39. ethnological research.mp.
40. ethnonursing research.mp.
41. constant comparative method.mp.
42. qualitative validity.mp.
43. purposive sample.mp.
44. observational method$.mp.
45. field stud$.mp.

46. theoretical sampl$.mp.
47. phenomenology/
48. phenomenological research.mp.
49. life experience$.mp.
50. cluster sampl$.mp.
51. or/31-50
52. 9 and 30 and 51

MEDLINE – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

1. Papillomavirus Vaccines/
2. (Papilloma virus adj25 (immun* or vaccin*)).mp.
3. (Papillomavirus adj25 (immun* or vaccin*)).mp.
4. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. 26 or 29
31. ethnonursing.af.
32. ethnograph$.mp.
33. phenomenol$.af.
34. grounded theory.mp.
35. (grounded adj (theor$ or study or studies or research or analys?s)).af.
36. (life stor$ or women's stor$).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
37. (emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or participant observ$.tw.
38. (social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or post modern$ or post-modern$ or feminis$ or interpret$).mp.
39. (action research or cooperative inquir$ or co operative inquir$ or co-operative inquir$).mp.
40. (humanistic or existential or experiential or paradigm$).mp.
41. human science.tw.

42. biographical method.tw.
43. qualitative validity.af.
44. purposive sampl$.af.
45. theoretical sampl$.af.
46. ((purpos$ adj4 sampl$) or (focus adj group$)).af.
47. (account or accounts or unstructured or open-ended or open ended or text$ or narrative$).mp.
48. (life world or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.
49. lived experience$.tw.
50. life experience$.mp.
51. cluster sampl$.mp.
52. (theme$ or thematic).mp.
53. categor$.mp.
54. observational method$.af.
55. field stud$.mp.
56. focus group$.af.
57. questionnaire$.mp.
58. content analysis.af.
59. thematic analysis.af.
60. constant comparative.af.
61. discourse analys?s.af.
62. ((discourse$ or discurs$) adj3 analys?s).tw.
63. (constant adj (comparative or comparison)).af.
64. narrative analys?s.af.
65. or/31-64
66. 9 and 30 and 65

MEDLINE – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

1. Papillomavirus Vaccines/
2. (Papilloma virus adj25 (immun* or vaccin*)).mp.
3. (Papillomavirus adj25 (immun* or vaccin*)).mp.
4. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. Public Policy/
11. policies*.mp.
12. policy*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (Health care adj25 polic*).mp.
16. (Healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. or/27-28
30. 26 or 29
31. findings.af.
32. interview$.af. or Interviews/
33. qualitative.af.
34. 31 or 32 or 33
35. 9 and 30 and 34

EMBASE – LIBRARIAN STRATEGY

1. Wart virus vaccine/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. Policy Making/
30. Polic* mak*.mp.
31. 29 or 30
32. 28 or 31
33. qualitative research/
34. health care survey/
35. interview/
36. information processing/
37. exp questionnaire/
38. qualitativ*.mp.
39. survey*.mp.
40. (interview* or focus group* or questionnaire* or experienc* or theme*).mp.
41. 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40
42. 9 and 32 and 41

EMBASE – WONG ET AL. (2007) STRATEGY

1. Wart virus vaccine/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. Policy Making/
30. Polic* mak*.mp.
31. 29 or 30
32. 28 or 31
33. (interview* or experience*).mp. or qualitative.tw.
34. 9 and 32 and 33

EMBASE – SHAW ET AL. (2007) THESAURUS STRATEGY

1. Wart virus vaccine/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. Policy Making/
30. Polic* mak*.mp.
31. 29 or 30
32. 28 or 31
33. qualitative stud$.mp.
34. nursing methodology research.mp.
35. questionnaire/
36. attitude/
37. focus group$.mp.
38. discourse analysis.mp.
39. content analysis.mp.
40. ethnographic research.mp.
41. ethnological research.mp.
42. ethnonursing research.mp.
43. constant comparative method.mp.
44. qualitative validity.mp.
45. purposive sample.mp.

46. observational method$.mp.
47. field stud$.mp.
48. theoretical sampl$.mp.
49. phenomenology/
50. phenomenological research.mp.
51. life experience$.mp.
52. cluster sampl$.mp.
53. or/33-52
54. 9 and 32 and 53

EMBASE – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

1. Wart virus vaccine/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. Policy Making/
30. Polic* mak*.mp.
31. 29 or 30
32. 28 or 31
33. ethnonursing.af.
34. ethnograph$.mp.
35. phenomenol$.af.
36. grounded theory.mp.
37. (grounded adj (theor$ or study or studies or research or analys?s)).af.
38. (life stor$ or women's stor$).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer]
39. (emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or participant observ$.tw.
40. (social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or post modern$ or post-modern$ or feminis$ or interpret$).mp.
41. (action research or cooperative inquir$ or co operative inquir$ or co-operative inquir$).mp.
42. (humanistic or existential or experiential or paradigm$).mp.

43. human science.tw.
44. biographical method.tw.
45. qualitative validity.af.
46. purposive sampl$.af.
47. theoretical sampl$.af.
48. ((purpos$ adj4 sampl$) or (focus adj group$)).af.
49. (account or accounts or unstructured or open-ended or open ended or text$ or narrative$).mp.
50. (life world or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.
51. lived experience$.tw.
52. life experience$.mp.
53. cluster sampl$.mp.
54. (theme$ or thematic).mp.
55. categor$.mp.
56. observational method$.af.
57. field stud$.mp.
58. focus group$.af.
59. questionnaire$.mp.
60. content analysis.af.
61. thematic analysis.af.
62. constant comparative.af.
63. discourse analys?s.af.
64. ((discourse$ or discurs$) adj3 analys?s).tw.
65. (constant adj (comparative or comparison)).af.
66. narrative analys?s.af.
67. or/33-36
68. 9 and 32 and 67

EMBASE – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

1. Wart virus vaccine/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. Ceravix*.mp.
9. or/1-8
10. POLICY/
11. policy*.mp.
12. policies*.mp.
13. health care policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. hospital policy/
18. (hospital adj25 polic*).mp.
19. or/10-18
20. decision making/
21. (Decision adj5 mak*).mp.
22. decision mak*.mp.
23. decision* process*.mp.
24. judgement*.mp.
25. judgment*.mp.
26. decision*.mp.
27. or/20-26
28. 19 and 27
29. Policy Making/
30. Polic* mak*.mp.
31. 29 or 30
32. 28 or 31
33. findings.af.
34. interview$.af. or Interviews/
35. qualitative.af.
36. 33 or 34 or 35
37. 9 and 32 and 36

HEALTHSTAR – LIBRARIAN STRATEGY

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. Qualitative Research/
32. health care surveys/ or interviews/ or narration/ or questionnaires/
33. Focus Groups/
34. (qualitativ* or survey* or interview* or focus group* or questionnaire* or experienc* or theme*).mp.
35. 31 or 32 or 33 or 34
36. 9 and 30 and 35

HEALTHSTAR – WONG ET AL. (2004) STRATEGY

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. (interview* or experience*).mp. or qualitative.tw.
32. 9 and 30 and 31

HEALTHSTAR – SHAW ET AL. (2007) THESAURUS STRATEGY

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. Qualitative Research/
32. Nursing Methodology Research/
33. Questionnaires/
34. exp Attitude/
35. Focus Groups/
36. discourse analysis.mp.
37. content analysis.mp.
38. ethnographic research.mp.
39. ethnological research.mp.
40. ethnonursing research.mp.
41. constant comparative method.mp.
42. qualitative validity.mp.
43. purposive sample.mp.
44. observational method$.mp.
45. field stud$.mp.

46. theoretical sampl$.mp.
47. phenomenological research.mp.
48. life experience$.mp.
49. cluster sampl$.mp.
50. phenomenology.mp.
51. or/31-50
52. 9 and 30 and 51

HEALTHSTAR – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. ethnonursing.af.
32. ethnograph$.mp.
33. phenomenol$.af.
34. grounded theory.mp.
35. (grounded adj (theor$ or study or studies or research or analys?s)).af.
36. (life stor$ or women's stor$).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
37. (emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or participant observ$.tw.
38. (social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or post modern$ or post-modern$ or feminis$ or interpret$).mp.
39. (action research or cooperative inquir$ or co operative inquir$ or co-operative inquir$).mp.
40. (humanistic or existential or experiential or paradigm$).mp.
41. human science.tw.
42. biographical method.tw.

43. qualitative validity.af.
44. purposive sampl$.af.
45. theoretical sampl$.af.
46. ((purpos$ adj4 sampl$) or (focus adj group$)).af.
47. (account or accounts or unstructured or open-ended or open ended or text$ or narrative$).mp.
48. (life world or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.
49. lived experience$.tw.
50. life experience$.mp.
51. cluster sampl$.mp.
52. (theme$ or thematic).mp.
53. categor$.mp.
54. observational method$.af.
55. field stud$.mp.
56. focus group$.af.
57. questionnaire$.mp.
58. content analysis.af.
59. thematic analysis.af.
60. constant comparative.af.
61. discourse analys?s.af.
62. ((discourse$ or discurs$) adj3 analys?s).tw.
63. (constant adj (comparative or comparison)).af.
64. narrative analys?s.af.
65. or/37-70
66. 9 and 30 and 65

HEALTHSTAR – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

1. Papillomavirus Vaccines/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (human papilloma virus adj25 (immun* or vaccin*)).mp.
5. (human papillomavirus adj25 (immun* or vaccin*)).mp.
6. (Hpv* adj25 (immun* or vaccin*)).mp.
7. Gardasil*.mp.
8. Cervarix*.mp.
9. or/1-8
10. exp Public Policy/
11. policy*.mp.
12. policies*.mp.
13. Health Policy/
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. Organizational Policy/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. judgement*.mp.
22. judgment*.mp.
23. decision* process*.mp.
24. decision*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. findings.af.
32. interview$.af. or Interviews/
33. qualitative.af.
34. or/31-33
35. 9 and 30 and 34

PSYCINFO – LIBRARIAN STRATEGY

1. exp Immunization/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. exp Qualitative Research/
32. exp Mail Surveys/ or exp Telephone Surveys/ or exp Surveys/
33. exp Interviews/
34. exp Group Discussion/
35. exp Questionnaires/
36. (qualitativ* or survey* or interview* or focus group* or questionnaire* or experienc* or theme*).mp.
37. 31 or 32 or 33 or 34 or 35 or 36
38. 9 and 30 and 37

PSYCINFO – WONG ET AL. (2004) STRATEGY

1. exp Immunization/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. (interview* or experience*).mp. or qualitative.tw.
32. 9 and 30 and 31

PSYCINFO – SHAW ET AL. (2007) THESAURUS STRATEGY

1. exp Immunization/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. Qualitative Research/
32. Questionnaires/
33. discourse analysis.mp.
34. content analysis.mp.
35. ethnographic research.mp.
36. ethnological research.mp.
37. ethnonursing research.mp.
38. constant comparative method.mp.
39. qualitative validity.mp.
40. purposive sample.mp.
41. observational method$.mp.
42. field stud$.mp.
43. theoretical sampl$.mp.
44. phenomenology/
45. phenomenological research.mp.

46. life experience$.mp.
47. cluster sampl$.mp.
48. exp Attitudes/
49. focus group*.mp.
50. or/31-49
51. 9 and 30 and 50

PSYCINFO – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

1. exp Immunization/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. ethnonursing.af.
32. ethnograph$.mp.
33. phenomenol$.af.
34. grounded theory.mp.
35. (grounded adj (theor$ or study or studies or research or analys?s)).af.
36. (life stor$ or women's stor$).mp. [mp=title, abstract, heading word, table of contents, key concepts]
37. (emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or participant observ$.tw.
38. (social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or post modern$ or post-modern$ or feminis$ or interpret$).mp.
39. (action research or cooperative inquir$ or co operative inquir$ or co-operative inquir$).mp.
40. (humanistic or existential or experiential or paradigm$).mp.
41. human science.tw.
42. biographical method.tw.

43. qualitative validity.af.
44. purposive sampl$.af.
45. theoretical sampl$.af.
46. ((purpos$ adj4 sampl$) or (focus adj group$)).af.
47. (account or accounts or unstructured or open-ended or open ended or text$ or narrative$).mp.
48. (life world or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.
49. lived experience$.tw.
50. life experience$.mp.
51. cluster sampl$.mp.
52. (theme$ or thematic).mp.
53. categor$.mp.
54. observational method$.af.
55. field stud$.mp.
56. focus group$.af.
57. questionnaire$.mp.
58. content analysis.af.
59. thematic analysis.af.
60. constant comparative.af.
61. discourse analys?s.af.
62. ((discourse$ or discurs$) adj3 analys?s).tw.
63. (constant adj (comparative or comparison)).af.
64. narrative analys?s.af.
65. or/31-64
66. 9 and 30 and 65

PSYCINFO – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

1. exp Immunization/
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
9. or/1-8
10. exp Health Care Policy/
11. policies*.mp.
12. policy*.mp.
13. (health adj25 polic*).mp.
14. (health care adj25 polic*).mp.
15. (healthcare adj25 polic*).mp.
16. (hospital adj25 polic*).mp.
17. Government Policy Making/
18. or/10-17
19. Decision Making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. Policy Making/
28. polic* mak*.mp.
29. 27 or 28
30. 26 or 29
31. findings.af. or (interview$.af. or interviews/) or qualitative.af.
32. 9 and 30 and 31

GLOBAL HEALTH – LIBRARIAN STRATEGY

1. (Papilloma virus adj25 (immun* or vaccin*)).mp.
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. qualitative techniques/ or qualitative analysis/
30. surveys/
31. interviews/
32. questionnaires/
33. (qualitativ* or survey* or interview* or focus group* or questionnaire* or experienc* or theme*).mp.
34. or/29-33
35. 9 and 28 and 34

GLOBAL HEALTH – WONG ET AL. (2004) STRATEGY

1. (Papilloma virus adj25 (immun* or vaccin*)).mp.
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. (interview* or experience*).mp. or qualitative.tw.
30. 9 and 28 and 29

GLOBAL HEALTH – SHAW ET AL. (2007) THESAURUS STRATEGY

1. (Papilloma virus adj25 (immun* or vaccin*)).mp.
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. Questionnaires/
30. discourse analysis.mp.
31. content analysis.mp.
32. ethnographic research.mp.
33. ethnological research.mp.
34. ethnonursing research.mp.
35. constant comparative method.mp.
36. qualitative validity.mp.
37. purposive sample.mp.
38. observational method$.mp.
39. field stud$.mp.
40. theoretical sampl$.mp.
41. phenomenology/
42. phenomenological research.mp.
43. life experience$.mp.
44. cluster sampl$.mp.
45. qualitative techniques/ or qualitative analysis/

46. exp attitudes/
47. focus group*.mp.
48. or/29-47
49. 9 and 28 and 48

GLOBAL HEALTH – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

1. (Papilloma virus adj25 (immun* or vaccin*)).mp.
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. ethnonursing.af.
30. ethnograph$.mp.
31. phenomenol$.af.
32. grounded theory.mp.
33. (grounded adj (theor$ or study or studies or research or analys?s)).af.
34. (life stor$ or women's stor$).mp. [mp=abstract, title, original title, broad terms, heading words]
35. (emic or etic or hermeneutic$ or heuristic$ or semiotic$).af. or (data adj1 saturat$).tw. or participant observ$.tw.
36. (social construct$ or (postmodern$ or post-structural$) or (post structural$ or poststructural$) or post modern$ or post-modern$ or feminis$ or interpret$).mp.
37. (action research or cooperative inquir$ or co operative inquir$ or co-operative inquir$).mp.
38. (humanistic or existential or experiential or paradigm$).mp.
39. human science.tw.
40. biographical method.tw.
41. qualitative validity.af.
42. purposive sampl$.af.

43. theoretical sampl$.af.
44. ((purpos$ adj4 sampl$) or (focus adj group$)).af.
45. (account or accounts or unstructured or open-ended or open ended or text$ or narrative$).mp.
46. (life world or life-world or conversation analys?s or personal experience$ or theoretical saturation).mp.
47. lived experience$.tw.
48. life experience$.mp.
49. cluster sampl$.mp.
50. (theme$ or thematic).mp.
51. categor$.mp.
52. observational method$.af.
53. field stud$.mp.
54. focus group$.af.
55. questionnaire$.mp.
56. content analysis.af.
57. thematic analysis.af.
58. constant comparative.af.
59. discourse analys?s.af.
60. ((discourse$ or discurs$) adj3 analys?s).tw.
61. (constant adj (comparative or comparison)).af.
62. narrative analys?s.af.
63. or/29-62
64. 9 and 28 and 63

GLOBAL HEALTH – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

1. (Papilloma virus adj25 (immun* or vaccin*)).mp.
2. (Papillomavirus adj25 (immun* or vaccin*)).mp.
3. (Human papilloma virus adj25 (immun* or vaccin*)).mp.
4. (Human papillomavirus adj25 (immun* or vaccin*)).mp.
5. (Hpv* adj25 (immun* or vaccin*)).mp.
6. Gardasil*.mp.
7. Cervarix*.mp.
8. (immunization or vaccination).sh.
9. or/1-7
10. or/1-8
11. policy/ or health policy/
12. policies*.mp.
13. policy*.mp.
14. (health adj25 polic*).mp.
15. (health care adj25 polic*).mp.
16. (healthcare adj25 polic*).mp.
17. government policy/
18. or/11-17
19. decision making/
20. decision mak*.mp.
21. decision* process*.mp.
22. decision*.mp.
23. judgement*.mp.
24. judgment*.mp.
25. or/19-24
26. 18 and 25
27. polic* mak*.mp.
28. 26 or 27
29. findings.af. or (interview*.af. or interviews/) or qualitative.af.
30. 9 and 28 and 29

WEB OF SCIENCE – ALL FIVE STRATEGIES

01. TS=(papillomavirus vaccine) OR TS=(papillomavirus immunization) OR TS=(Papilloma virus vaccin*) OR TS=(Papilloma virus immun*) OR TS=(Papillomavirus vaccin*) OR TS=(Papillomavirus immun*) OR TS=(human papilloma virus vaccin*) OR TS=(human papilloma virus immun*) OR TS=(human papillomavirus vaccin*) OR TS=(human papillomavirus immun*) OR TS=(hpv* vaccin*) OR TS=(hpv* immun*) OR TS=(Gardasil*) OR TS=(Cervarix*)
02. ((TS=policies* OR TS=policy* OR TS=(health polic*) OR TS=(healthcare polic*) OR TS=(health care polic*)) AND (TS=(decision mak*) OR TS=(decision* process*) OR TS=(decision*) OR TS=(judgement*) OR TS=(judgment*))) OR TS=polic* mak*
03. (TS=qualitativ*) OR (TS=survey*) OR (TS=interview*) OR (TS=focus group*) OR (TS=questionnaire*) OR (TS=experienc*) OR (TS=theme*)
04. #3 AND #2 AND #1
05. (TS=interview*) OR (TS=experience*) OR (TS=qualitative)
06. #5 AND #2 AND #1
07. #6 OR #4
08. (TS=qualitative research) OR (TS=qualitative stud*) OR (TS=nursing research methodology) OR (TS=questionnaire) OR (TS=attitude) OR (TS=focus groups) OR (TS=discourse analysis) OR (TS=content analysis) OR (TS=ethnographic research) OR (TS=ethnological research) OR (TS=ethnonursing research) OR (TS=constant comparative method) OR (TS=qualitative validity) OR (TS=purposive sampl*) OR (TS=observational research) OR (TS=field stud*) OR (TS=theoretical sampl*) OR (TS=phenomenology) OR (TS=phenomenological research) OR (TS=life experiences) OR (TS=cluster sample*)
09. #8 AND #2 AND #1
10. #9 OR #4
11. (TS=ethnonursing) OR (TS=ethnograph*) OR (TS=phenomenol*) OR (TS=grounded theor*) OR (TS=grounded stud*) OR (TS=grounded research) OR (TS=grounded analys?s) OR (TS=life stor*) OR (TS=women's stor*) OR (TS=emic) OR (TS=etic) OR (TS=hermeneutic*) OR (TS=heuristic*) OR (TS=semiotic*) OR (TS=data saturat*) OR (TS=participant observ*) OR (TS=social construct*) OR (TS=postmodern*) OR (TS=post structural*) OR (TS=feminis*) OR (TS=interpret*) OR (TS=action research) OR (TS=co-operative inquir*) OR (TS=humanistic) OR (TS=existential) OR (TS=experiential) OR (TS=paradigm*) OR (TS=field stud*) OR (TS=field research) OR (TS=human science) OR (TS=biographical method*) OR (TS=qualitative validity) OR (TS=purposive sampl*) OR (TS=theoretical sampl*) OR (TS=open-ended account*) OR (TS=unstructured account*) OR (TS=narrative*) OR (TS=life world) OR (TS=conversation analys?s) OR (TS= theoretical saturation) OR (TS=lived experience*) OR (TS=life experience*) OR (TS=cluster sampl*) OR (TS=theme*) OR (TS=thematic

analysis) OR (TS=constant comparative) OR (TS=discourse analys?s) OR (TS=discurs*) OR (TS=narrative analys?s)

12. #2 AND #1
13. #12 AND #11
14. #13 OR #4
15. (TS=findings) OR (TS=interview*) OR (TS=qualitative)
16. #15 AND #12
17. #16 OR #4
18. #16 OR #13 OR #9 OR #6 OR #4

CINAHL – ALL FIVE STRATEGIES

S1. MW papilloma virus vaccin* or TI papilloma virus vaccin* or AB papilloma virus vaccin*
S2. MW Papillomavirus vaccin* or TI Papillomavirus vaccin* or AB Papillomavirus vaccin*
S3. MW Papillomavirus immun* or TI Papillomavirus immun* or AB Papillomavirus immun*
S4. MW human papilloma virus vaccin* or TI human papilloma virus vaccin* or AB human papilloma virus vaccin*
S5. MW human papilloma virus immun* or TI human papilloma virus immun* or AB human papilloma virus immun*
S6. MW human papillomavirus vaccin* or TI human papillomavirus vaccin* or AB human papillomavirus vaccin*
S7. MW human papillomavirus immun* or TI human papillomavirus immun* or AB human papillomavirus immun*
S8. MW hpv* vaccin* or TI hpv* vaccin* or AB hpv* vaccin*
S9. MW hpv* immun* or TI hpv* immun* or AB hpv* immun*
S10. MW Gardasil* or TI Gardasil* or AB Gardasil*
S11. MW Cervarix* or TI Cervarix* or AB Cervarix*
S12. (S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11)
S13. MW policies* or TI policies* or AB policies*
S14. MW policy* or TI policy* or AB policy*
S15. MW health polic* or TI health polic* or AB health polic*
S16. MW healthcare polic* or TI healthcare polic* or AB healthcare polic*
S17. MW health care polic* or TI health care polic* or AB health care polic*
S18. (S13 or S14 or S15 or S16 or S17)
S19. MW decision mak* or TI decision mak* or AB decision mak*
S20. MW decision* process* or TI decision* process* or AB decision* process*
S21. MW decision* or TI decision* or AB decision*
S22. MW judgement* or TI judgement* or AB judgement*
S23. MW judgment* or TI judgment* or AB judgment*
S24. (S19 or S20 or S21 or S22 or S23)
S25. (S18 and S24)
S26. MW polic* mak* or TI polic* mak* or AB polic* mak*
S27. (S25 or S26)
S28. (MH "Qualitative Studies")
S29. (MH "Survey Research")
S30. (MH "Semi-Structured Interview") OR (MH "Structured Interview") OR (MH "Unstructured Interview") OR (MH "Interviews")
S31. (MH "Focus Groups")
S32. (MH "Open-Ended Questionnaires") OR (MH "Structured Questionnaires") OR (MH "Questionnaires")
S33. (MH "Life Experiences")

S34. (MH "Conceptual Framework")
S35. MW qualitativ* or TI qualitativ* or AB qualitativ*
S36. MW survey* or TI survey* or AB survey*
S37. MW interview* or TI interview* or AB interview*
S38. MW focus group* or TI focus group* or AB focus group*
S39. MW questionnaire* or TI questionnaire* or AB questionnaire*
S40. MW experienc* or TI experienc* or AB experienc*
S41. MW theme* or TI theme* or AB theme*
S42. (S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41)
S43. (S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11)
S44. (S27 AND S42 AND S43)
S45. TI interview or AB interview
S46. MW audiorecording
S47. MW qualitative stud* or TI qualitative stud* or AB qualitative stud*
S48. (S45 or S46 or S47)
S49. (S27 AND S43 AND S48)
S50. (MH "Qualitative Studies")
S51. (MH "Research Nursing")
S52. (MH "Attitude+")
S53. (MH "Questionnaires+")
S54. (MH "Focus Groups")
S55. (MH "Discourse Analysis")
S56. (MH "Content Analysis")
S57. (MH "Ethnographic Research")
S58. (MH "Ethnological Research")
S59. (MH "Ethnonursing Research")
S60. (MH "Constant Comparative Method")
S61. (MH "Qualitative Validity+")
S62. (MH "Purposive Sample")
S63. (MH "Observational Methods+")

S64. (MH "Field Studies")
S65. (MH "Theoretical Sample")
S66. (MH "Phenomenology")
S67. (MH "Phenomenological Research")
S68. (MH "Life Experiences+")
S69. (MH "Cluster Sample+")
S70. (S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59 or S60 or S61 or S62 or S63 or S64 or S65 or S66 or S67 or S68 or S69)
S71. (S27 AND S43 AND S70)
S72. (S44 or S71)
S73. TX findings
S74. (TX interview*) or (MH "interview+")
S75. TX qualitative
S76. (S73 or S74 or S75)
S77. (S27 AND S43 AND S76)
S78. (S44 OR S77)
S79. TX ethnonursing
S80. TI ethnograph* or MW ethnograph* or AB ethnograph*
S81. TX phenomenol*
S82. MW grounded theory or TI grounded theory or AB grounded theory
S83. TX grounded theor* or TX grounded stud* or TX grounded research or TX grounded analys?s
S84. TX life stor* or TX women's stor*
S85. TX emic or TX etic or TX hermeneutic* or TX heuristic* and TX semiotic*
S86. (TI data saturat* or AB data saturat*) or (TI participant observ* or AB participant observ*)
S87. (TI social construct* or AB social construct* or MW social construct*) or (TI postmodern* or AB postmodern* or MW postmodern*) or (TI post-structural* or AB post-structural* or MW post-structural*) or (TI post structural* or AB post structural* or MW post structural*) or (TI poststructural* or AB poststructural* or MW poststructural*) or (TI post modern* or AB post modern* or MW post modern*) or (TI post-modern* or AB post-modern* or MW post-modern*) or (TI feminis* or AB feminis* or MW feminis*) or (TI interpret* or AB interpret* or MW interpret*)
S88. (TI action research or AB action research or MW action research) or (TI cooperative inquir* or AB cooperative inquir* or MW cooperative inquir*) or (TI co operative inquir* or AB co operative inquir* or MW co operative inquir*) or (TI co-operative inquir* or AB co-operative inquir* or MW co-operative inquir*)
S89. (TI humanistic or AB humanistic or MW humanistic) or (TI existential or AB existential or MW existential) or (TI experiential or AB experiential or Mw experiential) or (TI paradigm* or AB paradigm* or MW paradigm*)

S90. (TI field study or AB field study) or (TI field studies or AB field studies) or (TI field research or AB field research)
S91. TI human science or AB human science
S92. TI biographical method or AB biographical method
S93. TI qualitative validity or AB qualitative validity or MW qualitative validity
S94. TI purposive sampl* or AB purposive sampl* or MW purposive sampl*
S95. TI theoretical sampl* or AB theoretical sampl* or MW theoretical sampl*
S96. (TI purpos* adj4 sampl* or AB purpos$ adj4 sampl* or MW purpos* adj4 sampl*) or (TI focus group* or AB focus group* or MW focus group*)
S97. (TI account or AB account or MW account) or (TI accounts or AB accounts or MW accounts) or (TI unstructured or AB unstructured or MW unstructured) or (TI open-ended or AB open-ended or MW open-ended) or (TI open ended or AB open ended or MW open ended) or (TI text* or AB text* or MW text*) or (TI narrative* or AB narrative* or MW narrative*)
S98. (TI life world or AB life world or MW life world) or (TI life-world or AB life-world or MW life-world) or (TI conversation analys?s or AB conversation analys?s or MW conversation analys?s) or (TI personal experience* or AB personal experience* or MW personal experience*) or (TI theoretical saturation or AB theoretical saturation or MW theoretical saturation)
S99. TI lived experience* or AB lived experience*
S100. TI life experience* or AB life experience* or MW life experience*
S101. TI cluster sampl* or AB cluster sampl* or MW cluster sampl*
S102. (TI theme* or AB theme* or MW theme*) or (TI thematic or AB thematic or MW thematic)
S103. (TI categor* or AB categor* or MW categor*)
S104. TX observational method*
S105. TI field stud* or AB field stud* or MW field stud*
S106. TX focus group*
S107. TI questionnaire* or AB questionnaire* or MW questionnaire*
S108. TX content analysis
S109. TX thematic analysis
S110. TX constant comparative
S111. TX discourse analys?s
S112. (TI discourse* adj3 analys?s or AB discourse* adj3 analys?s) and (TI discurs$ adj3 analys?s or AB discurs$ adj3 analys?s)
S113. (TI discourse* analys?s or AB discourse* analys?s) and (TI discurs$ analys?s or AB discurs$ analys?s)
S114. (TI discourse* adj3 analys?s or AB discourse* adj3 analys?s) or (TI discurs$ adj3 analys?s or AB discurs$ adj3 analys?s)
S115. TI discourse* adj3 analys?s or AB discourse* adj3 analys?s

S116. TI (discourse* adj3 analys?s) or AB (discourse* adj3 analys?s)
S117. TI (discourse* analys?s) or AB (discourse* analys?s)
S118. TI (discurs* analys?s) or AB (discurs* analys?s)
S119. TX constant comparative or TX constant comparison
S120. TX narrative analys?s
S121. (S79 or S80 or S81 or S82 or S83 or S84 or S85 or S86 or S87 OR S89 or S90 or S91 or S92 or S93 or S94 or S95 or S96 or S97 or S98 or S99 or S100 or S101 or S102 or S103 or S104 or S105 or S106 or S107 or S108 or S109 or S110 or S111 or S112 or S113 or S114 or S115 or S116 or S117 or S118 or S119 or S120)
S122. (S27 AND S43 AND S121)
S123. (S44 or S122)

SOCIOLOGICAL ABSTRACTS – LIBRARIAN STRATEGY

(KW=((Papilloma virus vaccin*) or (Papilloma virus immun*) or (Papillomavirus vaccin*)) or KW=((Papillomavirus immun*) or (human papilloma virus vaccin*) or (human papilloma virus immun*)) or KW=((human papillomavirus immun*) or (human papillomavirus immun*) or (hpv* vaccin*)) or KW=((hpv* immun*) or Gardasil* or Cervarix*)) AND(((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision* process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*))) AND((KW=qualitativ*) OR (KW=survey*) OR (KW=interview*) OR (KW=focus group*) OR (KW=questionnaire*) OR (KW=experienc*) OR (KW=theme*))

SOCIOLOGICAL ABSTRACTS – WONG ET AL. (2004) STRATEGY

(KW=((Papilloma virus vaccin*) or (Papilloma virus immun*) or (Papillomavirus vaccin*)) or KW=((Papillomavirus immun*) or (human papilloma virus vaccin*) or (human papilloma virus immun*)) or KW=((human papillomavirus immun*) or (human papillomavirus immun*) or (hpv* vaccin*)) or KW=((hpv* immun*) or Gardasil* or Cervarix*)) AND(((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision* process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*)))AND((KW=interview*) OR (KW=experience*) OR (KW=qualitative))

SOCIOLOGICAL ABSTRACTS – SHAW ET AL. (2007) THESAURUS STRATEGY

(KW=((Papilloma virus vaccin*) or (Papilloma virus immun*) or (Papillomavirus vaccin*)) or KW=((Papillomavirus immun*) or (human papilloma virus vaccin*) or (human papilloma virus immun*)) or KW=((human papillomavirus immun*) or (human papillomavirus immun*) or (hpv* vaccin*)) or KW=((hpv* immun*) or Gardasil* or Cervarix*)) AND (((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision* process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*)))AND ((KW=qualitative research) OR (KW=qualitative stud*) OR (KW=nursing research methodology) OR (KW=questionnaire) OR (KW=attitude) OR (KW=focus groups) OR (KW=discourse analysis) OR (KW=content analysis) OR (KW=ethnographic research) OR (KW=ethnological research) OR (KW=ethnonursing research) OR (KW=constant comparative method) OR (KW=qualitative validity) OR (KW=purposive sampl*) OR (KW=observational research) OR (KW=field stud*) OR (KW=theoretical sampl*) OR (KW=phenomenology) OR (KW=phenomenological research) OR (KW=life experiences) OR (KW=cluster sample*))

SOCIOLOGICAL ABSTRACTS – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

(KW=((Papilloma virus vaccin*) or (Papilloma virus immun*) or (Papillomavirus vaccin*)) or KW=((Papillomavirus immun*) or (human papilloma virus vaccin*) or (human papilloma virus immun*)) or KW=((human papillomavirus immun*) or (human papillomavirus immun*) or (hpv* vaccin*)) or KW=((hpv* immun*) or Gardasil* or Cervarix*)) AND (((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision* process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*)))AND((KW=ethnonursing) OR (KW=ethnograph*) OR (KW=phenomenol*) OR (KW=grounded theor*) OR (KW=grounded stud*) OR (KW=grounded research) OR (KW=grounded analys$s) OR (KW=life stor*) OR (KW=women's stor*) OR (KW=emic) OR (KW=etic) OR (KW=hermeneutic*) OR (KW=heuristic) OR (KW=semiotic) OR (KW=data saturat*) OR (KW=participant observ*) OR (KW=social construct*) OR (KW=postmodern*) OR (KW=post structural*) OR (KW=feminis*) OR (KW=interpret*) OR (KW=action research) OR (KW=co-operative inquir*) OR (KW=humanistic) OR (KW=existential) OR (KW=experiential) OR (KW=paradigm*) OR (KW=field stud*) OR (KW=field research) OR (KW=human science) OR (KW=biographical method*) OR (KW=qualitative validity) OR (KW=purposive sampl*) OR (KW=theoretical sampl*) OR (KW=open-ended account*) OR (KW=unstructured account*) OR (KW=narrative*) OR (KW=life world) OR (KW=conversation analys$s) OR (KW=theoretical saturation) OR (KW=lived experience*) OR (KW=life experience*) OR (KW=cluster sampl*) OR (KW=theme*) OR (KW=thematic analysis) OR (KW=constant comparative) OR (KW=discourse analys$s) OR (KW=discurs*) OR (KW=narrative analys$s))

SOCIOLOGICAL ABSTRACTS – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

(KW=((Papilloma virus vaccin*) or (Papilloma virus immun*) or (Papillomavirus vaccin*)) or KW=((Papillomavirus immun*) or (human papilloma virus vaccin*) or (human papilloma virus immun*)) or KW=((human papillomavirus immun*) or (human papillomavirus immun*) or (hpv* vaccin*)) or KW=((hpv* immun*) or Gardasil* or Cervarix*)) AND (((KW=(policies* or policy* or (health polic*)) or KW=((healthcare polic*) or (health care polic*))) and(KW=((decision mak*) or (decision* process*) or decision*) or KW=(judgement* or judgment*))) or(KW=(polic* mak*)))AND((KW=findings) OR (KW=interview*) OR (KW=qualitative))

SCOPUS – LIBRARIAN STRATEGY

((TITLE-ABS-KEY(Papilloma virus vaccin*)) OR (TITLE-ABS-KEY(Papilloma virus immun*)) OR (TITLE-ABS-KEY(Papillomavirus vaccin*)) OR (TITLE-ABS-KEY(Papillomavirus immun*)) OR (TITLE-ABS-KEY(human papilloma virus vaccin*)) OR (TITLE-ABS-KEY(human papilloma virus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(hpv* vaccin*)) OR (TITLE-ABS-KEY(hpv* immun*)) OR (TITLE-ABS-KEY(Gardasil*)) OR (TITLE-ABS-KEY(Cervarix*))) AND((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(health polic*)) OR (TITLE-ABS-KEY(healthcare polic*)) OR (TITLE-ABS-KEY(health care polic*))) AND ((TITLE-ABS-KEY(decision mak*)) OR (TITLE-ABS-KEY(decision* process*)) OR (TITLE-ABS-KEY(decision*) OR (TITLE-ABS-KEY(judgement*) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic* mak*))) AND((TITLE-ABS-KEY(qualitativ*)) OR (TITLE-ABS-KEY(survey*)) OR (TITLE-ABS-KEY(interview*)) OR (TITLE-ABS-KEY(focus group*)) OR (TITLE-ABS-KEY(questionnaire*)) OR (TITLE-ABS-KEY(experienc*)) OR (TITLE-ABS-KEY(theme*)))

SCOPUS – WONG ET AL. (2004) STRATEGY

((TITLE-ABS-KEY(Papilloma virus vaccin*)) OR (TITLE-ABS-KEY(Papilloma virus immun*)) OR (TITLE-ABS-KEY(Papillomavirus vaccin*)) OR (TITLE-ABS-KEY(Papillomavirus immun*)) OR (TITLE-ABS-KEY(human papilloma virus vaccin*)) OR (TITLE-ABS-KEY(human papilloma virus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(hpv* vaccin*)) OR (TITLE-ABS-KEY(hpv* immun*)) OR (TITLE-ABS-KEY(Gardasil*)) OR (TITLE-ABS-KEY(Cervarix*))) AND((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(health polic*)) OR (TITLE-ABS-KEY(healthcare polic*)) OR (TITLE-ABS-KEY(health care polic*))) AND ((TITLE-ABS-KEY(decision mak*)) OR (TITLE-ABS-KEY(decision* process*)) OR (TITLE-ABS-KEY(decision*) OR (TITLE-ABS-KEY(judgement*) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic* mak*)))AND((TITLE-ABS-KEY(interview*) OR (TITLE-ABS-KEY(experience*)) OR (TITLE-ABS-KEY(qualitative)))

SCOPUS – SHAW ET AL. (2007) THESAURUS STRATEGY

((TITLE-ABS-KEY(Papilloma virus vaccin*)) OR (TITLE-ABS-KEY(Papilloma virus immun*)) OR (TITLE-ABS-KEY(Papillomavirus vaccin*)) OR (TITLE-ABS-KEY(Papillomavirus immun*)) OR (TITLE-ABS-KEY(human papilloma virus vaccin*)) OR (TITLE-ABS-KEY(human papilloma virus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(hpv* vaccin*)) OR (TITLE-ABS-KEY(hpv* immun*)) OR (TITLE-ABS-KEY(Gardasil*)) OR (TITLE-ABS-KEY(Cervarix*))) AND((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(health polic*)) OR (TITLE-ABS-KEY(healthcare polic*)) OR (TITLE-ABS-KEY(health care polic*))) AND ((TITLE-ABS-KEY(decision mak*)) OR (TITLE-ABS-KEY(decision* process*)) OR (TITLE-ABS-KEY(decision*) OR (TITLE-ABS-KEY(judgement*) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic* mak*)))AND((TITLE-ABS-KEY(qualitative research)) OR (TITLE-ABS-KEY(qualitative stud*)) OR (TITLE-ABS-KEY(nursing research methodology)) OR (TITLE-ABS-KEY(questionnaire)) OR (TITLE-ABS-KEY(attitude)) OR (TITLE-ABS-KEY(focus groups)) OR (TITLE-ABS-KEY(discourse analysis)) OR (TITLE-ABS-KEY(content analysis)) OR (TITLE-ABS-KEY(ethnographic research)) OR (TITLE-ABS-KEY(ethnological research)) OR (TITLE-ABS-KEY(ethnonursing research)) OR (TITLE-ABS-KEY(constant comparative method)) OR (TITLE-ABS-KEY(qualitative validity)) OR (TITLE-ABS-KEY(purposive sampl*)) OR (TITLE-ABS-KEY(observational research)) OR (TITLE-ABS-KEY(field stud*)) OR (TITLE-ABS-KEY(theoretical sampl*)) OR (TITLE-ABS-KEY(phenomenology)) OR (TITLE-ABS-KEY(phenomenological research)) OR (TITLE-ABS-KEY(life experiences)) OR (TITLE-ABS-KEY(cluster sample*)))

SCOPUS – SHAW ET AL. (2007) FREE-TEXT TERMS STRATEGY

((TITLE-ABS-KEY(Papilloma virus vaccin*)) OR (TITLE-ABS-KEY(Papilloma virus immun*)) OR (TITLE-ABS-KEY(Papillomavirus vaccin*)) OR (TITLE-ABS-KEY(Papillomavirus immun*)) OR (TITLE-ABS-KEY(human papilloma virus vaccin*)) OR (TITLE-ABS-KEY(human papilloma virus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(hpv* vaccin*)) OR (TITLE-ABS-KEY(hpv* immun*)) OR (TITLE-ABS-KEY(Gardasil*)) OR (TITLE-ABS-KEY(Cervarix*)))AND((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(health polic*)) OR (TITLE-ABS-KEY(healthcare polic*)) OR (TITLE-ABS-KEY(health care polic*))) AND ((TITLE-ABS-KEY(decision mak*)) OR (TITLE-ABS-KEY(decision* process*)) OR (TITLE-ABS-KEY(decision*) OR (TITLE-ABS-KEY(judgement*) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic* mak*))) AND((TITLE-ABS-KEY(ethnonursing)) OR (TITLE-ABS-KEY(ethnograph*)) OR (TITLE-ABS-KEY(phenomenol*)) OR (TITLE-ABS-KEY(grounded theor*)) OR (TITLE-ABS-KEY(grounded stud*)) OR (TITLE-ABS-KEY(grounded research)) OR (TITLE-ABS-KEY(grounded analys*)) OR (TITLE-ABS-KEY(life stor*)) OR (TITLE-ABS-KEY(women's stor*)) OR (TITLE-ABS-KEY(emic)) OR (TITLE-ABS-KEY(etic)) OR (TITLE-ABS-KEY(hermeneutic*)) OR (TITLE-ABS-KEY(heuristic)) OR (TITLE-ABS-KEY(semiotic)) OR (TITLE-ABS-KEY(data saturat*)) OR (TITLE-ABS-KEY(participant observ*)) OR (TITLE-ABS-KEY(social construct*)) OR (TITLE-ABS-KEY(postmodern*)) OR (TITLE-ABS-KEY(post structural*)) OR (TITLE-ABS-KEY(feminis*)) OR (TITLE-ABS-KEY(interpret*)) OR (TITLE-ABS-KEY(action research)) OR (TITLE-ABS-KEY(co-operative inquir*)) OR (TITLE-ABS-KEY(humanistic)) OR (TITLE-ABS-KEY(existential)) OR (TITLE-ABS-KEY(experiential)) OR (TITLE-ABS-KEY(paradigm*)) OR (TITLE-ABS-KEY(field stud*)) OR (TITLE-ABS-KEY(field research)) OR (TITLE-ABS-KEY(human science)) OR (TITLE-ABS-KEY(biographical method*)) OR (TITLE-ABS-KEY(qualitative validity)) OR (TITLE-ABS-KEY(purposive sampl*)) OR (TITLE-ABS-KEY(theoretical sampl*)) OR (TITLE-ABS-KEY(open-ended account*)) OR (TITLE-ABS-KEY(unstructured account*)) OR (TITLE-ABS-KEY(narrative*)) OR (TITLE-ABS-KEY(life world)) OR (TITLE-ABS-KEY(conversation analys*)) OR (TITLE-ABS-KEY(theoretical saturation)) OR (TITLE-ABS-KEY(lived experience*)) OR (TITLE-ABS-KEY(life experience*)) OR (TITLE-ABS-KEY(cluster sampl*)) OR (TITLE-ABS-KEY(theme*)) OR (TITLE-ABS-KEY(thematic analysis)) OR (TITLE-ABS-KEY(constant comparative)) OR (TITLE-ABS-KEY(discourse analys*)) OR (TITLE-ABS-KEY(discurs*)) OR (TITLE-ABS-KEY(narrative analys*)))

SCOPUS – SHAW ET AL. (2007) BROAD-BASED TERMS STRATEGY

((TITLE-ABS-KEY(Papilloma virus vaccin*)) OR (TITLE-ABS-KEY(Papilloma virus immun*)) OR (TITLE-ABS-KEY(Papillomavirus vaccin*)) OR (TITLE-ABS-KEY(Papillomavirus immun*)) OR (TITLE-ABS-KEY(human papilloma virus vaccin*)) OR (TITLE-ABS-KEY(human papilloma virus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(human papillomavirus immun*)) OR (TITLE-ABS-KEY(hpv* vaccin*)) OR (TITLE-ABS-KEY(hpv* immun*)) OR (TITLE-ABS-KEY(Gardasil*)) OR (TITLE-ABS-KEY(Cervarix*))) AND((((TITLE-ABS-KEY(policies*)) OR (TITLE-ABS-KEY(policy*)) OR (TITLE-ABS-KEY(health polic*)) OR (TITLE-ABS-KEY(healthcare polic*)) OR (TITLE-ABS-KEY(health care polic*))) AND ((TITLE-ABS-KEY(decision mak*)) OR (TITLE-ABS-KEY(decision* process*)) OR (TITLE-ABS-KEY(decision*) OR (TITLE-ABS-KEY(judgement*) OR (TITLE-ABS-KEY(judgment*)))) OR (TITLE-ABS-KEY(polic* mak*))) AND((TITLE-ABS-KEY(findings) OR (TITLE-ABS-KEY (interview*)) OR (TITLE-ABS-KEY(qualitative)))

APPENDIX 3 – ABSTRACT SCREENING PROCESS (ORIGINAL SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

RefID	PI Last Name	Year	Yes	Maybe	No	Reasoning
1391	Ames	2007		X		too general?
1389	Arnold	2007	X			
1376	Aronowitz	2009			X	chronic disease and risk experiences in general
1467	Ayres	2009			X	nurses' role in cancer control
1469	Berchtold	2010	X			
1380	Beutels	2010	X			
1358	Beutels	2008	X			
1378	Bhan	2010		X		no abstract
1427	Brophy	2007			X	premature ventricular beats and myocardial infarction
1379	Canfell	2010	X			
1401	Cantor	2003	X			
1447	Dasbach	2006		X		review paper?
1432	de Timóteo Mavimbe	2006			X	not HPV
1471	Denny	2008			X	Review paper focusing is on cervical cancer screening
1385	Drummond	2008			X	not HPV
1425	Duintjer Tebbens	2008			X	different statistical techniques used for uncertainty; not HPV
1434	Fedson	2005			X	influenza vaccine
1448	Fisher	2010			X	sex differences in terms of pharmaceutical companies' regulations
1400	Franco	2005			X	review of HPV vaccine
1359	Garland	2008			X	control of cervical cancer in Asia Oceania
1465	Garland	2010			X	review paper on HPV and cervical cancer around the world
1383	Goldhaber-Fiebert	2008		X		no abstract
1388	Goldhaber-Fiebert	2007	X			
1424	Goldhaber-Fiebert	2008	X			
1446	Goldie	2006	X			
1393	Goldie	2006	X			
1365	Goldie	2004	X			
1473	Gostin	2007		X		No abstract
1435	Gust	2005			X	parents' uncertainty
1351	Haas	2009	X			
1421	Haug	2009			X	ethics of medical associations
1472	Herzog	2008	X			

1430	Hobson-West	2007			X	not HPV
1436	Hobson-West	2003			X	not HPV
1426	Horlick	2008			X	implementing school-entry vaccination laws rather than the uncertainty around HPV
1390	Kahn	2007			X	recommending HPV vaccine from paediatricians' point of view
1360	Kim	2008	X			
1371	Kinney	2009			X	age when HPV vaccination should occur
1450	Madhavi	2010			X	India's vaccine policy in general
1443	Marais	2008			X	a case-control study on HPV
1459	Marckmann	2008			X	ethics of vaccination policies
1386	Marino	2008		X		no abstract
1354	Mathur	2010			X	Californanian high-school girls' decision to get the HPV vaccine
1372	Mathur	2009			X	high-school girls' decision to get the HPV vaccine
1392	Newall	2007	X			
1377	Ogilvie	2010			X	parents' opinion regarding HPV vaccination
1381	Opel	2008	X			
1403	Othman	2009			X	pap smears in Malaysia
1373	Paavonen	2009			X	review of HPV vaccine
1352	Pineros	2010	X			
1453	Prieto de la Rosa	2008		X		about implementing in Mexico
1404	Reynales-Shigematsu	2009	X			
1457	Rogoza	2008	X			
1357	Roughead	2008	X			
1423	Senier	2008			X	not HPV
1462	Sherris	2006	X			
1399	Zimmerman	2006	X			
Total = 57			22	7	28	

REVIEWER: JAMES BAO

RefID	PI	Year	Yes	Maybe	No	Reasoning
1391	Ames	2007	√			
1389	Arnold	2007	√			
1376	Aronowitz	2009	√			
1467	Ayres	2009			√	Focus on nursing as an agent of cancer control activities. Does not outline anything about risks, tradeoffs, uncertainty, etc…
1468	Bertchtold	2010	√			
1380	Beutels	2010	√			
1358	Beutels	2008	√			
1378	Bhan	2010		√		No abstract available: Should investigate full text article.
1427	Brophy	2007	√			
1379	Canfell	2010	√			
1401	Cantor	2003	√			
1447	Dasbach	2006	√			
1432	de Timóteo Mavimbe	2006		√		Has information on uncertainties in population data which in turn affect the views proposed on immunization coverage.
1471	Denny	2008			√	Not applicable to uncertainty and decision making.
1385	Drummond	2008			√	Concerns cost effectiveness of vaccines more than uncertainty
1425	Duintjer Tebbens	2008			√	Does deal with uncertainty, but probably not in the proper context; more mathematical
1434	Fedson	2005			√	Does not pertain to uncertainty
1448	Fisher	2010			√	No focus on uncertainty.
1400	Franco	2005			√	No focus on uncertainty.
1359	Garland	2008			√	Focuses on recommendations for cervical cancer prevention, no element of uncertainty in process
1465	Garland	2010			√	No focus on uncertainty.
1383	Goldhaber-Fiebert	2008		√		No abstract available.
1388	Goldhaber-Fiebert	2007		√		Mentions uncertainty, but not sure if its context is relevant to ours.
1424	Goldhaber-Fiebert	2008	√			
1446	Goldie	2006	√			
1393	Goldie	2006	√			
1365	Goldie	2004	√			
1473	Gostin	2007			√	Title not applicable
1435	Gust	2005	√			
1351	Haas	2009	√			

1421	Haug	2009			√	Investigation into the release of educational programs before clinical endpoints were published.
1472	Herzog	2008		√		May have information about dealing with uncertainty from a patient side point of view
1430	Hobson-West	2007			√	Concerns issues associated with the coverage of MMR dangers
1436	Hobson-West	2003			√	Concerns issues associated with the coverage of MMR dangers
1426	Horlick	2008		√		May detail the uncertainties that policy makers for school-entry vaccinations face
1390	Kahn	2007			√	Does not relate to policy decisions
1360	Kim	2008	√			
1371	Kinney	2009			√	Does not pertain to uncertainty in decision making
1450	Madhavi	2010			√	Talks about India's policy
1443	Marais	2008			√	Deals with antibodies, not clinical
1459	Marckmann	2008		√		May show some uncertainties in the process of compulsory immunization.
1386	Marino	2008	√			
1354	Mathur	2010			√	Does not relate to policy decisions
1372	Mathur	2009			√	Does not relate to policy decisions
1392	Newall	2007	√			
1377	Ogilvie	2010			√	Does not relate to policy decisions
1381	Opel	2008			√	Does not relate to uncertainty in policy-making decisions
1403	Othman	2009			√	Comments about state of Malyasia's health care system, does not concern uncertainty in decision making
1373	Paavonen	2009				Does not relate to policy decisions
1352	Pineros	2010	√			
1453	Prieto de la Rosa	2008	√			
1404	Reynales-Shigematsu	2009	√			
1457	Rogoza	2008	√			
1357	Roughead	2008	√			
1423	Senier	2008			√	Does not relate to uncertainty in policy-making decisions
1462	Sherris	2006	√			
1399	Zimmerman	2006	√			
Total = 57			26	7	24	

REVIEWERS' AGREEMENT/DISAGREEMENT

- yes/maybe = include; no = exclude

RefID	PI Last Name	Year	Tamana Hafid	James Bao	Agree/Disagree
1391	Ames	2007	Include	Include	Agree
1389	Arnold	2007	Include	Include	Agree
1376	Aronowitz	2009	**Exclude**	Include	**Disagree**
1467	Ayres	2009	Exclude	Exclude	Agree
1469	Berchtold	2010	Include	Include	Agree
1380	Beutels	2010	Include	Include	Agree
1358	Beutels	2008	Include	Include	Agree
1378	Bhan	2010	Include	Include	Agree
1427	Brophy	2007	**Exclude**	Include	**Disagree**
1379	Canfell	2010	Include	Include	Agree
1401	Cantor	2003	Include	Include	Agree
1447	Dasbach	2006	Include	Include	Agree
1432	de Timóteo Mavimbe	2006	Exclude	**Include**	**Disagree**
1471	Denny	2008	Exclude	Exclude	Agree
1385	Drummond	2008	Exclude	Exclude	Agree
1425	Duintjer Tebbens	2008	Exclude	Exclude	Agree
1434	Fedson	2005	Exclude	Exclude	Agree
1448	Fisher	2010	Exclude	Exclude	Agree
1400	Franco	2005	Exclude	Exclude	Agree
1359	Garland	2008	Exclude	Exclude	Agree
1465	Garland	2010	Exclude	Exclude	Agree
1383	Goldhaber-Fiebert	2008	Include	Include	Agree
1388	Goldhaber-Fiebert	2007	Include	Include	Agree
1424	Goldhaber-Fiebert	2008	Include	Include	Agree
1446	Goldie	2006	Include	Include	Agree
1393	Goldie	2006	Include	Include	Agree
1365	Goldie	2004	Include	Include	Agree
1473	Gostin	2007	**Include**	Exclude	**Disagree**
1435	Gust	2005	**Exclude**	Include	**Disagree**
1351	Haas	2009	Include	Include	Agree
1421	Haug	2009	Exclude	Exclude	Agree
1472	Herzog	2008	Include	Include	Agree
1430	Hobson-West	2007	Exclude	Exclude	Agree
1436	Hobson-West	2003	Exclude	Exclude	Agree
1426	Horlick	2008	**Exclude**	Include	**Disagree**
1390	Kahn	2007	Exclude	Exclude	Agree
1360	Kim	2008	Include	Include	Agree
1371	Kinney	2009	Exclude	Exclude	Agree
1450	Madhavi	2010	Exclude	Exclude	Agree
1443	Marais	2008	Exclude	Exclude	Agree
1459	Marckmann	2008	**Exclude**	Include	**Disagree**
1386	Marino	2008	Include	Include	Agree
1354	Mathur	2010	Exclude	Exclude	Agree
1372	Mathur	2009	Exclude	Exclude	Agree

1392	Newall	2007	Include	Include	Agree
1377	Ogilvie	2010	Exclude	Exclude	Agree
1381	Opel	2008	**Include**	Exclude	**Disagree**
1403	Othman	2009	Exclude	Exclude	Agree
1373	Paavonen	2009	Exclude	Exclude	Agree
1352	Pineros	2010	Include	Include	Agree
1453	Prieto de la Rosa	2008	Include	Include	Agree
1404	Reynales-Shigematsu	2009	Include	Include	Agree
1457	Rogoza	2008	Include	Include	Agree
1357	Roughead	2008	Include	Include	Agree
1423	Senier	2008	Exclude	Exclude	Agree
1462	Sherris	2006	Include	Include	Agree
1399	Zimmerman	2006	Include	Include	Agree

	TH – Include	TH – Exclude	
JB – Include	27	6	33
JB – Exclude	2	22	24
	29	28	57

Kappa= 0.719
95% confidence interval = 0.538 to 0.899

APPENDIX 4 – ABSTRACT SCREENING PROCESS (QUALITATIVE SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

RefID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2117	Andrus	2008		X		Could indirectly discuss policy decision-making
1760	Arbyn	2009			X	Focus on cervical screening
1762	Aronowitz	2009			X	Review paper
1720	Beutels	2008		X		Could indirectly discuss policy decision-making
1981	Bigman	2010			X	About translation of information regarding HPV, not actual uncertainty
1757	Bingham	2009	X			
2138	Boehner	2003			X	Uptake of vaccine by college students
1983	Bryson	2010	X			
1728	Calloway	2006			X	Portrayed of HPV in the media
2087	Cantor	2003			X	Mathematical modeling (quantitative)
1712	Colgrove	2010		X		No abstract
2050	Constantine	2007			X	Uptake of vaccine by parents
1998	Crane	2008			X	Comparing survey methods
2008	De Timoteo	2006		X		Addressing immunizations in general but could involve HPV
1723	Dekker	2008	X			
1784	Di Mario	2007			X	Review paper about HPV policies
2047	Dillner	2008			X	Laboratory component of HPV on a global level
1707	Fisher	2010			X	Sex differences in the research and health care
1990	Ford	2009	X			
2053	Franco	2005			X	Review paper
1721	Garland	2008			X	Summary paper regarding the AOGIN conference
2109	Gavin	2009			X	Report about sexual/reproductive health
2131	Goldie	2006			X	Review paper regarding cervical cancer, cytology screening and the HPV vaccine
1991	Guh	2009			X	Regarding typhoid fever vaccine
2013	Gust	2005			X	Uptake/regulatory views of parents
2044	Haas	2009		X		Case studies
2120	Herzog	2008			X	Review paper about the HPV
2004	Hobson-West	2007			X	Qualitative paper about parents who are against vaccination policies
2015	Hobson-West	2003			X	About MMR vaccine
1771	Jauregui	2011			X	Guideline for vaccination policies
1787	Kahn	2007			X	Qualitative paper about paediatricians' view of HPV
2043	Katahoire	2008		X		Could have section about policy

						makers and health leaders
2000	Kim	2007			X	Quantitative paper regarding HPV vaccine in rural China
2104	Lavy-Bruhl	2009	X			
2100	Lantos	2010			X	General review paper about vaccination
2089	Laurent-Ledru	2011			X	Review paper about civil society organisations and their role within the HPV vaccine polies (Europe)
2098	Lee	2010		X		Very general abstract
2002	Lichtenberg	2007			X	General discussion regarding the deployment of vaccine by either public or private approach
1732	Lieu	2002		X		Though general, there could be a segment on HPV
1794	Lo	2006		X		No abstract
1781	Lopalco	2008			X	General Information/Review about Vaccine Policies
2056	Loring	2010	X			Method 4 = Key Informant Interviews
2112	Leudtke	2008			X	Review of HPV mandates
2010	Makadon	2006			X	The treatment of minority groups in terms of sexual orientation within the health care system
2069	Markowitz	2010			X	Post-licensure monitoring of the HPV vaccine in the US
1752	Mathew	2010			X	Algorithm for decision-making in terms of vaccine-related policies
1715	Mathur	2010			X	Qualitative Research targeting actual patients
1984	McCave	2010			X	Barriers faced by health providers in terms of the HPV vaccine
1826	McRee	2010		X		No abstract
1725	Minkoff	2007		X		No section on method; sounds like a review but could be otherwise
1992	Moran	2008			X	Review about the voluntary vs compulsory vaccine programs in Italy (General; not HPV specific)
1709	Nghi	2010		X		Mixed Methods but there seems to be a qualitative section about policy-makers
1779	Nohynek	2008		X		Somewhat addresses the decision-making process of HPV but there is no method section
2042	Oligvie	2010			X	Targeted towards parents
1716	Othman	2009			X	Focus on cervical screening rather the HPV vaccine
1754	Paavonent	2009			X	Literature review about the HPV vaccine
1724	Pallecaros	2007			X	Review paper
1755	Pichon-Riviere	2009			X	The use of HTAs in Latin America
1827	Pineros	2010	X			

1750	Prasad	2009			X	Review paper
1986	Ravitsky	2009			X	Book on bioethics
1997	Senier	2008			X	Parent attitude/opinion if vaccines
1770	Sered	2011			X	Not HPV
1776	Shefer	2008			X	Review paper about HPV vaccine policies in US, Canada, and Australia
1837	Sherries	2006		X		Mentions knowledge gaps in policy-makers about to HPV
1780	Siegrist	2008		X		General to vaccine but could contain segment on HPV
2003	Sloan	2007			X	Chapter
2019	Stoto	1997			X	Book Section
2102	Syrjanon	2010			X	Review paper about Finland's take on the HPV vaccine
2099	Thompson	2010		X		Feminist analysis
1748	Tilson	2010			X	Pharmaeconomic assessment in Irelant
2134	Tjalma	2006		X		No abstract
1756	Tsui	2009	X			
1988	Walker	2010		X		Though focus is on African-American women, there could potentially be information about policy-makers
2011	Wilson	2005			X	Not HPV
2051	Wood	2006		X		mentions factors that come into play at the national level for decision-making in regards to the HPV vaccine
Total = 76			8	19	49	

REVIEWER: PAVEL ROSHANOV

RefID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2117	Andrus	2008		X		
1760	Arbyn	2009			X	
1762	Aronowitz	2009			X	
1720	Beutels	2008			X	
1981	Bigman	2010			X	
1757	Bingham	2009	X			
2138	Boehner	2003		X		
1983	Bryson	2010		X		
1728	Calloway	2006		X		
2087	Cantor	2003			X	
1712	Colgrove	2010		X		
2050	Constantine	2007		X		
1998	Crane	2008			X	
2008	De Timoteo	2006	X			
1723	Dekker	2008			X	
1784	Di Mario	2007			X	
2047	Dillner	2008			X	
1707	Fisher	2010			X	
1990	Ford	2009	X			
2053	Franco	2005			X	
1721	Garland	2008			X	
2109	Gavin	2009			X	
2131	Goldie	2006			X	
1991	Guh	2009			X	
2013	Gust	2005			X	
2044	Haas	2009		X		
2120	Herzog	2008			X	
2004	Hobson-West	2007			X	
2015	Hobson-West	2003			X	
1771	Jauregui	2011			X	
1787	Kahn	2007			X	
2043	Katahoire	2008		X		
2000	Kim	2007			X	
2104	Lavy-Bruhl	2009		X		
2100	Lantos	2010		X		
2089	Laurent-Ledru	2011			X	
2098	Lee	2010		X		
2002	Lichtenberg	2007			X	
1732	Lieu	2002		X		
1794	Lo	2006		X		
1781	Lopalco	2008			X	
2056	Loring	2010			X	
2112	Leudtke	2008			X	
2010	Makadon	2006			X	
2069	Markowitz	2010			X	
1752	Mathew	2010			X	

1715	Mathur	2010			X	
1984	McCave	2010			X	
1826	McRee	2010		X		
1725	Minkoff	2007		X		
1992	Moran	2008		X		
1709	Nghi	2010	X			
1779	Nohynek	2008			X	
2042	Oligvie	2010			X	
1716	Othman	2009			X	
1754	Paavonent	2009			X	
1724	Pallecaros	2007			X	
1755	Pichon-Riviere	2009			X	
1827	Pineros	2010		X		
1750	Prasad	2009			X	
1986	Ravitsky	2009			X	
1997	Senier	2008			X	
1770	Sered	2011		X		
1776	Shefer	2008		X		
1837	Sherries	2006		X		
1780	Siegrist	2008			X	
2003	Sloan	2007			X	
2019	Stoto	1997			X	
2102	Syrjanon	2010			X	
2099	Thompson	2010		X		
1748	Tilson	2010			X	
2134	Tjalma	2006		X		
1756	Tsui	2009			X	
1988	Walker	2010	X			
2011	Wilson	2005			X	
2051	Wood	2006		X		
Total = 76			5	23	48	

REVIEWERS' AGREEMENT/DISAGREEMENT

- yes/maybe = include; no = exclude

RefID	PI Last Name	Year	Tamana Hafid	Pavel Roshanov	Agree/Disagree
2117	Andrus	2008	Include	Include	Agree
1760	Arbyn	2009	Exclude	Exclude	Agree
1762	Aronowitz	2009	Exclude	Exclude	Agree
1720	Beutels	2008	Include	**Exclude**	**Disagree**
1981	Bigman	2010	Exclude	Exclude	Agree
1757	Bingham	2009	Include	Include	Agree
2138	Boehner	2003	**Exclude**	Include	**Disagree**
1983	Bryson	2010	Include	Include	Agree
1728	Calloway	2006	**Exclude**	Include	**Disagree**
2087	Cantor	2003	Exclude	Exclude	Agree
1712	Colgrove	2010	Include	Include	Agree
2050	Constantine	2007	**Exclude**	Include	**Disagree**
1998	Crane	2008	Exclude	Exclude	Agree
2008	De Timoteo	2006	Include	Include	Agree
1723	Dekker	2008	Include	**Exclude**	**Disagree**
1784	Di Mario	2007	Exclude	Exclude	Agree
2047	Dillner	2008	Exclude	Exclude	Agree
1707	Fisher	2010	Exclude	Exclude	Agree
1990	Ford	2009	Include	Include	Agree
2053	Franco	2005	Exclude	Exclude	Agree
1721	Garland	2008	Exclude	Exclude	Agree
2109	Gavin	2009	Exclude	Exclude	Agree
2131	Goldie	2006	Exclude	Exclude	Agree
1991	Guh	2009	Exclude	Exclude	Agree
2013	Gust	2005	Exclude	Exclude	Agree
2044	Haas	2009	Include	Include	Agree
2120	Herzog	2008	Exclude	Exclude	Agree
2004	Hobson-West	2007	Exclude	Exclude	Agree
2015	Hobson-West	2003	Exclude	Exclude	Agree
1771	Jauregui	2011	Exclude	Exclude	Agree
1787	Kahn	2007	Exclude	Exclude	Agree
2043	Katahoire	2008	Include	Include	Agree
2000	Kim	2007	Exclude	Exclude	Agree
2104	Lavy-Bruhl	2009	Include	Include	Agree
2100	Lantos	2010	**Exclude**	Include	**Disagree**
2089	Laurent-Ledru	2011	Exclude	Exclude	Agree
2098	Lee	2010	Include	Include	Agree
2002	Lichtenberg	2007	Exclude	Exclude	Agree
1732	Lieu	2002	Include	Include	Agree
1794	Lo	2006	Include	Include	Agree
1781	Lopalco	2008	Exclude	Exclude	Agree
2056	Loring	2010	**Include**	Exclude	**Disagree**
2112	Leudtke	2008	Exclude	Exclude	Agree
2010	Makadon	2006	Exclude	Exclude	Agree

2069	Markowitz	2010	Exclude	Exclude	Agree
1752	Mathew	2010	Exclude	Exclude	Agree
1715	Mathur	2010	Exclude	Exclude	Agree
1984	McCave	2010	Exclude	Exclude	Agree
1826	McRee	2010	Include	Include	Agree
1725	Minkoff	2007	Include	Include	Agree
1992	Moran	2008	**Exclude**	Include	**Disagree**
1709	Nghi	2010	Include	Include	Agree
1779	Nohynek	2008	Include	**Exclude**	**Disagree**
2042	Oligvie	2010	Exclude	Exclude	Agree
1716	Othman	2009	Exclude	Exclude	Agree
1754	Paavonent	2009	Exclude	Exclude	Agree
1724	Pallecaros	2007	Exclude	Exclude	Agree
1755	Pichon-Riviere	2009	Exclude	Exclude	Agree
1827	Pineros	2010	Include	Include	Agree
1750	Prasad	2009	Exclude	Exclude	Agree
1986	Ravitsky	2009	Exclude	Exclude	Agree
1997	Senier	2008	Exclude	Exclude	Agree
1770	Sered	2011	**Exclude**	Include	**Disagree**
1776	Shefer	2008	**Exclude**	Include	**Disagree**
1837	Sherries	2006	Include	Include	Agree
1780	Siegrist	2008	**Include**	Exclude	**Disagree**
2003	Sloan	2007	Exclude	Exclude	Agree
2019	Stoto	1997	Exclude	Exclude	Agree
2102	Syrjanon	2010	Exclude	Exclude	Agree
2099	Thompson	2010	Include	Include	Agree
1748	Tilson	2010	Exclude	Exclude	Agree
2134	Tjalma	2006	Include	Include	Agree
1756	Tsui	2009	**Include**	Exclude	**Disagree**
1988	Walker	2010	Include	Include	Agree
2011	Wilson	2005	Exclude	Exclude	Agree
2051	Wood	2006	Include	Include	Agree

	TH – Include	TH – Exclude	
PR – Include	21	7	28
PR – Exclude	6	42	48
	27	49	76

Kappa= 0.630

95% confidence interval = 0.448 to 0.812

APPENDIX 5 – ABSTRACT SCREENING PROCESS (REFERENCES SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

Ref ID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2342	Adams	2007			X	Review paper examining impact of HPV vaccine on cancer screening
2244	Barnabas	2006	X			
2332	Basu	2007			X	Response to Colgrove article
2322	Boot	2007	X			
2250	Brisson	2007	X			
2341	Ferko	2008			X	Review
2334	Field	2008			X	Framework for ethical decision-making
2323	Franco	2006			X	Review on impact on HPV vaccine
2339	Franco	2008		X		Qualitative?
2253	French	2007	X			
2317	Garnett	2006			X	Review of modelling
2305	Garnett	2000	X			
1446	Goldie	2006			X	Review paper
2266	Goldie	2004	X			
2331	Harries	2009	X			
2254	Hughes	2002	X			
2255	Insinga	2007	X			
2318	Kohli	2007	X			
2246	Kulasingam	2003	X			
2256	Manhart	2006			X	Prevalence of HPV
2248	Sanders	2003	X			
2335	Shefer	2008		X		Talks about the decision-making process in Canada, Australia, and US (but is it a review?)
2340	Suarez	2008	X			
2243	Taira	2004	X			
2333	Zimet	2008			X	Review
Total = 25			14	2	9	

REVIEWER: SANDY GILL

Ref ID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2342	Adams	2007			X	
2244	Barnabas	2006	X			
2332	Basu	2007			X	
2322	Boot	2007	X			
2250	Brisson	2007	X			
2341	Ferko	2008			X	
2334	Field	2008	X			
2323	Franco	2006			X	
2339	Franco	2008			X	
2253	French	2007	X			
2317	Garnett	2006			X	
2305	Garnett	2000	X			
1446	Goldie	2006			X	
2266	Goldie	2004	X			
2331	Harries	2009	X			
2254	Hughes	2002	X			
2255	Insinga	2007	X			
2318	Kohli	2007	X			
2246	Kulasingam	2003	X			
2256	Manhart	2006			X	
2248	Sanders	2003	X			
2335	**Shefer**	**2008**			**X**	
2340	Suarez	2008	X			
2243	Taira	2004	X			
2333	Zimet	2008			X	
Total = 25			15	0	10	

REVIEWERS' AGREEMENT/DISAGREEMENT

- yes/maybe = include; no = exclude

RefID	PI Last Name	Year	Tamana Hafid	Sandy Gill	Agree/Disagree
2342	Adams	2007	Exclude	Exclude	Agree
2244	Barnabas	2006	Include	Include	Agree
2332	Basu	2007	Exclude	Exclude	Agree
2322	Boot	2007	Include	Include	Agree
2250	Brisson	2007	Include	Include	Agree
2341	Ferko	2008	Exclude	Exclude	Agree
2334	Field	2008	**Exclude**	Include	**Disagree**
2323	Franco	2006	Exclude	Exclude	Agree
2339	Franco	2008	**Include**	Exclude	**Disagree**
2253	French	2007	Include	Include	Agree
2317	Garnett	2006	Exclude	Exclude	Agree
2305	Garnett	2000	Include	Include	Agree
1446	Goldie	2006	Exclude	Exclude	Agree
2266	Goldie	2004	Include	Include	Agree
2331	Harries	2009	Include	Include	Agree
2254	Hughes	2002	Include	Include	Agree
2255	Insinga	2007	Include	Include	Agree
2318	Kohli	2007	Include	Include	Agree
2246	Kulasingam	2003	Include	Include	Agree
2256	Manhart	2006	Exclude	Exclude	Agree
2248	Sanders	2003	Include	Include	Agree
2335	Shefer	2008	**Include**	Exclude	**Disagree**
2340	Suarez	2008	Include	Include	Agree
2243	Taira	2004	Include	Include	Agree
2333	Zimet	2008	Exclude	Exclude	Agree

	TH – Include	TH – Exclude	
PR – Include	14	1	15
PR – Exclude	2	8	10
	16	9	25

Kappa= 0.746
95% confidence interval = 0.477 to 1.014

APPENDIX 6 – ABSTRACT SCREENING PROCESS ("PLUS ONE LINK" SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

RefID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2142	Andrus	2008	X			
2143	Andrus	2008	X			
2147	Barr	2007			X	Review paper regarding efficacy of the HPV vaccine
2148	Bartolini	2010	X			
2152	Biellik	2009	X			
2153	Bingham	2009	X			
2155	Bornstein	2007			X	Review paper regarding efficacy of the HPV vaccine
2154	Bornstein	2007			X	General information about HPV policy
2156	Bossert	1998			X	Not HPV
2157	Brabin	2007			X	Parents
2158	Brown	2010			X	GPs and nurses
2163	Crager	2009			X	Role of universities and generic medicine in developing countries
2164	Delgado-Gallego	2010		X		Could potentially include segment on HPV
2167	Donders	2009			X	Population: Women
2168	Donders	2008			X	Population: Women
2171	Fazekas	2008			X	Population: Women
2172	Flaherty	2009		X		
2175	Garland	2008			X	Summary of conference AOGIN
2177	Garland	2008		X		"challenges and opportunities to be considered for policy decisions"
2179	Goldie	2008		X		
2180	Gorissen	2005			X	Practices of policy-makers but not HPV related
2181	Gottlieb	2009			X	Population: Parents
2182	Haas	2009	X			
2184	Harries	2009	X			
2185	Herzog	2008			X	Review
2186	Hessel	2009		X		
2188	Hopkins	2009			X	Population: clinicians
2191	Jauregui	2011			X	Guidelines for policy decision-making
2193	Karimi Zarchi	2009			X	Review
2194	Katahoire	2008	X			
2195	Keating	2008			X	Population: medical practices
2196	King	2008	X			
2198	Kling	2010		X		Discusses some uncertainties; unsure whether it is an original paper or a review
2200	Koulova	2008		X		Could potentially include first-person data

2202	La Torre	2010			X	HTA of HPV vaccine in the Italian context
2209	Markowitz	2007			X	Review of HPV vaccine and guidelines for its use
2211	McIntosh	2008			X	Review from a pharmacist's point of view
2213	Monk	2007			X	Review on HPV vaccine
2216	Munoz	2008		X		Unsure whether there is any original research from the abstract
2217	Munoz	2008			X	Review of HPV vaccine efficacy in French
2215	Murillo	2009			X	HPV prevalence survey
2218	Onder	2008			X	Analysis of making vaccination mandatory
2219	Pagliusi	2004	X			
2220	Pineros	2010	X			
2223	Reynales	2009			X	Cost-effectiveness of the vaccine in Mexico
2225	Sankaranarayanan	2009		X		Discusses many uncertainties but unsure whether it's an original article
2226	Sarin	2008		X		No abstract
2229	Sherris	2006	X			
2231	Sussman	2007			X	Population: primary care clinicians
2232	Theroux	2008		X		No abstract
2234	Tsu	2009		X		Discusses barriers but unsure whether it is an original article
2237	Winkler	2008	X			
2239	Wong	2009			X	Population: potential recipients and their mothers
2240	Wong	2009			X	Population: mothers
2241	Zimet	2008			X	Review
Total = 55			13	12	30	

Reviewer: Pavel Roshanov

RefID	PI Last Name	Year	Yes	Maybe	No	Reasoning
2142	Andrus	2008		X		
2143	Andrus	2008		X		
2147	Barr	2007			X	
2148	Bartolini	2010		X		
2152	Biellik	2009		X		
2153	Bingham	2009		X		
2155	Bornstein	2007			X	
2154	Bornstein	2007			X	
2156	Bossert	1998			X	
2157	Brabin	2007			X	
2158	Brown	2010			X	
2163	Crager	2009			X	
2164	Delgado-Gallego	2010		X		
2167	Donders	2009			X	
2168	Donders	2008			X	
2171	Fazekas	2008			X	
2172	Flaherty	2009	X			
2175	Garland	2008		X		
2177	Garland	2008		X		
2179	Goldie	2008	X			
2180	Gorissen	2005			X	
2181	Gottlieb	2009			X	
2182	Haas	2009			X	
2184	Harries	2009		X		
2185	Herzog	2008	X			
2186	Hessel	2009			X	
2188	Hopkins	2009			X	
2191	Jauregui	2011			X	
2193	Karimi Zarchi	2009			X	
2194	Katahoire	2008			X	
2195	Keating	2008			X	
2196	King	2008		X		
2198	Kling	2010	X			
2200	Koulova	2008	X			
2202	La Torre	2010			X	
2209	Markowitz	2007			X	
2211	McIntosh	2008			X	
2213	Monk	2007			X	
2216	Munoz	2008		X		
2217	Munoz	2008	X			
2215	Murillo	2009			X	
2218	Onder	2008			X	
2219	Pagliusi	2004		X		
2220	Pineros	2010		X		
2223	Reynales	2009			X	
2225	Sankaranarayanan	2009	X			

2226	Sarin	2008	X			
2229	Sherris	2006		X		
2231	Sussman	2007			X	
2232	Theroux	2008	X			
2234	Tsu	2009	X			
2237	Winkler	2008	X			
2239	Wong	2009		X		
2240	Wong	2009			X	
2241	Zimet	2008			X	
Total = 55			11	15	29	

REVIEWERS' AGREEMENT/DISAGREEMENT

- yes/maybe = include; no = exclude

RefID	PI Last Name	Year	Tamana Hafid	Pavel Roshanov	Agree/Disagree
2142	Andrus	2008	Include	Include	Agree
2143	Andrus	2008	Include	Include	Agree
2147	Barr	2007	Exclude	Exclude	Agree
2148	Bartolini	2010	Include	Include	Agree
2152	Biellik	2009	Include	Include	Agree
2153	Bingham	2009	Include	Include	Agree
2155	Bornstein	2007	Exclude	Exclude	Agree
2154	Bornstein	2007	Exclude	Exclude	Agree
2156	Bossert	1998	Exclude	Exclude	Agree
2157	Brabin	2007	Exclude	Exclude	Agree
2158	Brown	2010	Exclude	Exclude	Agree
2163	Crager	2009	Exclude	Exclude	Agree
2164	Delgado-Gallego	2010	Include	Include	Agree
2167	Donders	2009	Exclude	Exclude	Agree
2168	Donders	2008	Exclude	Exclude	Agree
2171	Fazekas	2008	Exclude	Exclude	Agree
2172	Flaherty	2009	Include	Include	Agree
2175	Garland	2008	**Exclude**	Include	**Disagree**
2177	Garland	2008	Include	Include	Agree
2179	Goldie	2008	Include	Include	Agree
2180	Gorissen	2005	Exclude	Exclude	Agree
2181	Gottlieb	2009	Exclude	Exclude	Agree
2182	Haas	2009	**Include**	Exclude	**Disagree**
2184	Harries	2009	Include	Include	Agree
2185	Herzog	2008	**Exclude**	Include	**Disagree**
2186	Hessel	2009	Include	**Exclude**	**Disagree**
2188	Hopkins	2009	Exclude	Exclude	Agree
2191	Jauregui	2011	Exclude	Exclude	Agree
2193	Karimi Zarchi	2009	Exclude	Exclude	Agree
2194	Katahoire	2008	**Include**	Exclude	**Disagree**
2195	Keating	2008	Exclude	Exclude	Agree
2196	King	2008	Include	Include	Agree
2198	Kling	2010	Include	Include	Agree
2200	Koulova	2008	Include	Include	Agree
2202	La Torre	2010	Exclude	Exclude	Agree
2209	Markowitz	2007	Exclude	Exclude	Agree
2211	McIntosh	2008	Exclude	Exclude	Agree
2213	Monk	2007	Exclude	Exclude	Agree
2216	Munoz	2008	Include	Include	Agree
2217	Munoz	2008	**Exclude**	Include	**Disagree**
2215	Murillo	2009	Exclude	Exclude	Agree
2218	Onder	2008	Exclude	Exclude	Agree
2219	Pagliusi	2004	Include	Include	Agree
2220	Pineros	2010	Include	Include	Agree

2223	Reynales	2009	Exclude	Exclude	Agree
2225	Sankaranarayanan	2009	Include	Include	Agree
2226	Sarin	2008	Include	Include	Agree
2229	Sherris	2006	Include	Include	Agree
2231	Sussman	2007	Exclude	Exclude	Agree
2232	Theroux	2008	Include	Include	Agree
2234	Tsu	2009	Include	Include	Agree
2237	Winkler	2008	Include	Include	Agree
2239	Wong	2009	**Exclude**	Include	**Disagree**
2240	Wong	2009	Exclude	Exclude	Agree
2241	Zimet	2008	Exclude	Exclude	Agree

	TH – Include	TH – Exclude	
PR – Include	22	4	26
PR – Exclude	3	26	29
	25	30	55

Kappa= 0.744
95% confidence interval = 0.567 to 0.921

APPENDIX 7 – FULL-TEXT SCREENING FORM

Reviewer Initials	Ref ID	Primary Author	Year

Is the study ...

□ Quantitative (Table 1) □ Qualitative (Table 2)

□ Neither (Discard) → please specify: _____

TABLE 1 – QUANTITATIVE		Yes	Unclear	No
Context	Is the context specific to the Human Papilloma Virus (HPV) vaccine?			
Focus	Is the primary focus on decisions regarding resource allocation within the policy-making process?			
Population	Is there a health care dilemma regarding the implementation of the HPV vaccine within the decision-making process?			
Intervention	Is there exposure to uncertainty? (open to all forms, including cost-effectiveness, magnitude of benefit versus risk, acceptability to social norms, patient or provider norms, etc)			
Comparison	Is it compared to other levels of uncertainty, whether they be none or lower?			
Outcome	Was the final recommended policy decision in favour of the HPV vaccine?			
Language	Is it in English?			
Date	Is it 1990 onwards?			
Should it be included within the systematic review?			N/A	

TABLE 2 – QUALITATIVE		Yes	Unclear	No
Context	Is the context specific to Human Papilloma Virus (HPV) vaccine?			
Focus	Is the primary focus regarding different sources and types of uncertainty in regards to the HPV vaccine within the decision-making process? (including magnitude of benefit versus risk, acceptability to social norms, patient or provider norms, etc)			
Language	Is it in English?			
Date	Is it 1990 onwards?			
Should it be included within the meta-ethnography?			N/A	

APPENDIX 8 – FULL-TEXT SCREENING PROCESS (ORIGINAL SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	1391	Ames	2007	Yes	No (RP)
2	1389	Arnold	2007	Yes	No (RP)
3	1469	Berchtold	2010	Yes	Yes (Quan)
4	1380	Beutels	2010	Yes	No (RP)
5	1358	Beutels	2008	Yes	No (RP)
6	1378	Bhan	2010	Yes	No (LtE)
7	1379	Canfell	2010	Yes	No (RP)
8	1401	Cantor	2003	Yes	No (RP)
9	1447	Dasbach	2006	Yes	No (RP)
10	1432	de Timóteo Mavimbe	2006	Yes	No (Qual)
11	1388	Goldhaber-Fiebert	2007	Yes	No (Quan)
12	1383	Goldhaber-Fiebert	2008	Yes	No (LtE)
13	1424	Goldhaber-Fiebert	2008	Yes	No (Thesis)
14	1365	Goldie	2004	Yes	Yes (Quan)
15	1393	Goldie	2006	Yes	No (RP)
16	1446	Goldie	2006	Yes	No (RP)
17	1473	Gostin	2007	Yes	No (RP)
18	1351	Haas	2009	Yes	No (RP)
19	1472	Herzog	2008	Yes	No (OP)
20	1360	Kim	2008	Yes	No (RP)
21	1386	Marino	2008	Yes	No (OP)
22	1392	Newall	2007	Yes	No (RP)
23	1381	Opel	2008	Yes	No (Critique)
24	1352	Pineros	2010	Yes	Yes (Qual)
25	1453	Prieto de la Rosa	2008	N/A	No (Non-English)
26	1404	Reynales-Shigematsu	2009	Yes	Yes (Quan)
27	1457	Rogoza	2008	Yes	Yes (Quan)
28	1357	Roughead	2008	Yes	No (RP)
29	1462	Sherris	2006	Yes	No (RP)
30	1399	Zimmerman	2006	Yes	No (RP)

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWER: SANDY GILL

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	1391	Ames	2007	Yes	No
2	1389	Arnold	2007	Yes	No
3	1469	Berchtold	2010	Yes	Yes (Quan)
4	1380	Beutels	2010	Yes	No
5	1358	Beutels	2008	Yes	No
6	1378	Bhan	2010	Yes	No
7	1379	Canfell	2010	Yes	No
8	1401	Cantor	2003	Yes	No
9	1447	Dasbach	2006	Yes	No
10	1432	de Timóteo Mavimbe	2006	Yes	No
11	1388	Goldhaber-Fiebert	2007	Yes	Yes (Quan)
12	1383	Goldhaber-Fiebert	2008	Yes	No
13	1424	Goldhaber-Fiebert	2008	Yes	No
14	1365	Goldie	2004	Yes	Yes (Quan)
15	1393	Goldie	2006	Yes	No
16	1446	Goldie	2006	Yes	No
17	1473	Gostin	2007	Yes	No
18	1351	Haas	2009	Yes	Yes (Qual)
19	1472	Herzog	2008	Yes	No
20	1360	Kim	2008	Yes	No
21	1386	Marino	2008	Yes	No
22	1392	Newall	2007	Yes	No
23	1381	Opel	2008	Yes	No
24	1352	Pineros	2010	Yes	Yes (Qual)
25	1453	Prieto de la Rosa	2008	N/A	No
26	1404	Reynales-Shigematsu	2009	Yes	Yes (Quan)
27	1457	Rogoza	2008	Yes	Yes (Quan)
28	1357	Roughead	2008	Yes	No
29	1462	Sherris	2006	Yes	No
30	1399	Zimmerman	2006	Yes	No

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWERS' AGREEMENT/DISAGREEMENT

RefID	PI Last Name	Year	Tamana Hafid	Sandy Gill	Agree/Disagree
1391	Ames	2007	Exclude	Exclude	Agree
1389	Arnold	2007	Exclude	Exclude	Agree
1469	Berchtold	2010	Include	Include	Agree
1380	Beutels	2010	Exclude	Exclude	Agree
1358	Beutels	2008	Exclude	Exclude	Agree
1378	Bhan	2010	Exclude	Exclude	Agree
1379	Canfell	2010	Exclude	Exclude	Agree
1401	Cantor	2003	Exclude	Exclude	Agree
1447	Dasbach	2006	Exclude	Exclude	Agree
1432	de Timóteo Mavimbe	2006	Exclude	Exclude	Agree
1388	Goldhaber-Fiebert	2007	**Exclude**	Include	Disagree
1383	Goldhaber-Fiebert	2008	Exclude	Exclude	Agree
1424	Goldhaber-Fiebert	2008	Exclude	Exclude	Agree
1365	Goldie	2004	Include	Include	Agree
1393	Goldie	2006	Exclude	Exclude	Agree
1446	Goldie	2006	Exclude	Exclude	Agree
1473	Gostin	2007	Exclude	Exclude	Agree
1351	Haas	2009	**Exclude**	Include	Disagree
1472	Herzog	2008	Exclude	Exclude	Agree
1360	Kim	2008	Exclude	Exclude	Agree
1386	Marino	2008	Exclude	Exclude	Agree
1392	Newall	2007	Exclude	Exclude	Agree
1381	Opel	2008	Exclude	Exclude	Agree
1352	Pineros	2010	Include	Include	Agree
1453	Prieto de la Rosa	2008	Exclude	Exclude	Agree
1404	Reynales-Shigematsu	2009	Include	Include	Agree
1457	Rogoza	2008	Include	Include	Agree
1357	Roughead	2008	Exclude	Exclude	Agree
1462	Sherris	2006	Exclude	Exclude	Agree
1399	Zimmerman	2006	Exclude	Exclude	Agree

	TH – Include	TH – Exclude	
SG – Include	5	2	7
SG – Exclude	0	23	23
	5	25	30

Kappa= 0.793
95% confidence interval= 0.522 to 1.064

APPENDIX 9 – FULL-TEXT SCREENING PROCESS (QUALITATIVE SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2117	Andrus	2008	Yes	No (RP)
2	1757	Bingham	2009	Yes	Yes (Qual)
3	1983	Bryson	2010	Yes	No (Qual)
4	1712	Colgrove	2010	Yes	Yes (Qual)
5	1990	Ford	2009	Yes	No (Qual)
6	2043	Katahoire	2008	Yes	Yes (Qual)
7	2104	Levy-Bruhl	2009	Yes	No (Quan)
8	2098	Lee	2010	Yes	No (Guide)
9	1732	Lieu	2002	Yes	No (Qual/Quan)
10	1794	Lo	2006	Yes	No (Editorial)
11	2056	Loring	2010	Yes	No (Thesis)
12	1826	McRee	2010	Yes	No (LtE)
13	1725	Minkoff	2007	Yes	No (RP)
14	1709	Nghi	2010	Yes	Yes (Qual)
15	1780	Siegrist	2008	Yes	No (RP)
16	2099	Thompson	2010	Yes	No (OP)
17	2134	Tjalma	2006	Yes	No (OP)
18	1756	Tsui	2009	Yes	Yes (Qual)
19	1988	Walker	2010	Yes	No (Thesis)
20	2051	Wood	2006	Yes	No (RP)

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWER: SANDY GILL

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2117	Andrus	2008	Yes	No
2	1757	Bingham	2009	Yes	Yes (Qual)
3	1983	Bryson	2010	Yes	No
4	1712	Colgrove	2010	Yes	Yes (Qual)
5	1990	Ford	2009	Yes	No
6	2043	Katahoire	2008	Yes	Yes (Qual)
7	2098	Lee	2010	Yes	No
8	2104	Levy-Bruhl	2009	Yes	Yes (Qual)
9	1732	Lieu	2002	Yes	No
10	1794	Lo	2006	Yes	No
11	2056	Loring	2010	Yes	No
12	1826	McRee	2010	Yes	No
13	1725	Minkoff	2007	Yes	No
14	1709	Nghi	2010	Yes	Yes (Qual)
15	1780	Siegrist	2008	Yes	No
16	2099	Thompson	2010	Yes	No
17	2134	Tjalma	2006	Yes	No
18	1756	Tsui	2009	Yes	No
19	1988	Walker	2010	Yes	No
20	2051	Wood	2006	Yes	No

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWERS' AGREEMENT/DISAGREEMENT

RefID	PI Last Name	Year	Tamana Hafid	Sandy Gill	Agree/Disagree
2117	Andrus	2008	Exclude	Exclude	Agree
1757	Bingham	2009	Include	Include	Agree
1983	Bryson	2010	Exclude	Exclude	Agree
1712	Colgrove	2010	Include	Include	Agree
1990	Ford	2009	Exclude	Exclude	Agree
2043	Katahoire	2008	Include	Include	Agree
2098	Lee	2010	Exclude	Exclude	Agree
2104	Levy-Bruhl	2009	**Exclude**	Include	**Disagree**
1732	Lieu	2002	Exclude	Exclude	Agree
1794	Lo	2006	Exclude	Exclude	Agree
2056	Loring	2010	Exclude	Exclude	Agree
1826	McRee	2010	Exclude	Exclude	Agree
1725	Minkoff	2007	Exclude	Exclude	Agree
1709	Nghi	2010	Include	Include	Agree
1780	Siegrist	2008	Exclude	Exclude	Agree
2099	Thompson	2010	Exclude	Exclude	Agree
2134	Tjalma	2006	Exclude	Exclude	Agree
1756	Tsui	2009	**Include**	Exclude	**Disagree**
1988	Walker	2010	Exclude	Exclude	Agree
2051	Wood	2006	Exclude	Exclude	Agree

	TH – Include	TH – Exclude	
SG – Include	4	1	5
SG – Exclude	1	14	15
	5	15	20

Kappa= 0.733
95% confidence interval = 0.386 to 1.080

APPENDIX 10 – FULL-TEXT SCREENING PROCESS (REFERENCES SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2244	Barnabas	2006	Yes	Yes (Quan)
2	2322	Boot	2007	Yes	Yes (Quan)
3	2250	Brisson	2007	Yes	Yes (Quan)
4	2339	Franco	2008	Yes	No (RP)
5	2253	French	2007	Yes	Yes (Quan)
6	2305	Garnett	2000	Yes	No (RP)
7	2254	Hughes	2002	Yes	Yes (Quan)
8	2255	Insinga	2007	Yes	Yes (Quan)
9	2318	Kohli	2007	Yes	Yes (Quan)
10	2246	Kulasingam	2003	Yes	Yes (Quan)
11	2248	Sanders	2003	Yes	Yes (Quan)
12	2335	Shefer	2008	Yes	No (RP)
13	2340	Suarez	2008	Yes	Yes (Quan)
14	2243	Taira	2004	Yes	Yes (Quan)

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWER: SANDY GILL

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2244	Barnabas	2006	Yes	Yes
2	2322	Boot	2007	Yes	Yes
3	2250	Brisson	2007	Yes	Yes
4	2339	Franco	2008	Yes	No
5	2253	French	2007	Yes	Yes
6	2305	Garnett	2000	Yes	No
7	2254	Hughes	2002	Yes	No
8	2255	Insinga	2007	Yes	Yes
9	2318	Kohli	2007	Yes	No
10	2246	Kulasingam	2003	Yes	Yes
11	2248	Sanders	2003	Yes	Yes
12	2335	Shefer	2008	Yes	No
13	2340	Suarez	2008	Yes	Yes
14	2243	Taira	2004	Yes	Yes

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWERS' AGREEMENT/DISAGREEMENT

RefID	PI Last Name	Year	Tamana Hafid	Sandy Gill	Agree/Disagree
2244	Barnabas	2006	Include	Include	Agree
2322	Boot	2007	Include	Include	Agree
2250	Brisson	2007	Include	Include	Agree
2339	Franco	2008	Exclude	Exclude	Agree
2253	French	2007	Include	Include	Agree
2305	Garnett	2000	Exclude	Exclude	Agree
2254	Hughes	2002	**Include**	Exclude	**Disagree**
2255	Insinga	2007	Include	Include	Agree
2318	Kohli	2007	**Include**	Exclude	**Disagree**
2246	Kulasingam	2003	Include	Include	Agree
2248	Sanders	2003	Include	Include	Agree
2335	Shefer	2008	Exclude	Exclude	Agree
2340	Suarez	2008	Include	Include	Agree
2243	Taira	2004	Include	Include	Agree

	TH – Include	TH – Exclude	
SG – Include	9	0	9
SG – Exclude	2	3	5
	11	3	14

Kappa= 0.806
95% confidence interval = 0.448 to 1.164

APPENDIX 11 – FULL-TEXT SCREENING PROCESS ("PLUS ONE LINK" SEARCH STRATEGY)

REVIEWER: TAMANA HAFID

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2143	Andrus	2008	Yes	No (RP)
2	2148	Bartolini	2010	Yes	Yes (Qual)
3	2152	Biellik	2009	Yes	Yes (Qual)
4	2153	Bingham	2009	Yes	Yes (Qual)
5	2164	Delgado-Gallego	2010	N/A	No (Non-English)
6	2172	Flaherty	2009	Yes	No (OP)
7	2177	Garland	2008	Yes	No (RP)
8	2179	Goldie	2008	Yes	Yes (Quan)
9	2184	Harries	2009	Yes	Yes (Qual)
10	2196	King	2008	Yes	Yes (Quan)
11	2198	Kling	2010	Yes	No (RP)
12	2200	Koulova	2008	Yes	No (RP)
13	2216	Munoz	2008	Yes	No (RP)
14	2219	Pagliusi	2004	Yes	No (Report)
15	2225	Sankaranarayanan	2009	Yes	No (RP)
16	2226	Sarin	2008	Yes	No (OP)
17	2232	Theroux	2008	Yes	No (RP)
18	2234	Tsu	2009	Yes	No (RP)
19	2237	Winkler	2008	Yes	No (RP)

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWER: SANDY GILL

#	Ref ID	PI Last Name	Year	Read Through	Verdict
1	2143	Andrus	2008	Yes	No
2	2148	Bartolini	2010	Yes	Yes (Qual)
3	2152	Biellik	2009	Yes	Yes (Qual)
4	2153	Bingham	2009	Yes	Yes (Qual)
5	2164	Delgado-Gallego	2010	Yes	No
6	2172	Flaherty	2009	Yes	No
7	2177	Garland	2008	Yes	No
8	2179	Goldie	2008	Yes	No
9	2184	Harries	2009	Yes	Yes (Qual)
10	2196	King	2008	Yes	Yes (Qual)
11	2198	Kling	2010	Yes	No
12	2200	Koulova	2008	Yes	No
13	2216	Munoz	2008	Yes	No
14	2219	Pagliusi	2004	Yes	No
15	2225	Sankaranarayanan	2009	Yes	No
16	2226	Sarin	2008	Yes	No
17	2232	Theroux	2008	Yes	No
18	2234	Tsu	2009	Yes	No
19	2237	Winkler	2008	Yes	No

RP = Review Paper
LtE = Letter to Editor
Quan = Quantitative Article
Qual = Qualitative Article
HPV = Human Papillomavirus
DM = Decision-Making
OP = Opinion Piece

REVIEWERS' AGREEMENT/DISAGREEMENT

RefID	PI Last Name	Year	Tamana Hafid	Sandy Gill	Agree/Disagree
2143	Andrus	2008	Exclude	Exclude	Agree
2148	Bartolini	2010	Include	Include	Agree
2152	Biellik	2009	Include	Include	Agree
2153	Bingham	2009	Include	Include	Agree
2164	Delgado-Gallego	2010	Exclude	Exclude	Agree
2172	Flaherty	2009	Exclude	Exclude	Agree
2177	Garland	2008	Exclude	Exclude	Agree
2179	Goldie	2008	**Include**	Exclude	**Disagree**
2184	Harries	2009	Include	Include	Agree
2196	King	2008	Include	Include	Agree
2198	Kling	2010	Exclude	Exclude	Agree
2200	Koulova	2008	Exclude	Exclude	Agree
2216	Munoz	2008	Exclude	Exclude	Agree
2219	Pagliusi	2004	Exclude	Exclude	Agree
2225	Sankaranarayanan	2009	Exclude	Exclude	Agree
2226	Sarin	2008	Exclude	Exclude	Agree
2232	Theroux	2008	Exclude	Exclude	Agree
2234	Tsu	2009	Exclude	Exclude	Agree
2237	Winkler	2008	Exclude	Exclude	Agree

	TH – Include	TH – Exclude	
SG – Include	5	0	5
SG – Exclude	1	13	14
	6	13	19

Kappa= 0.872
95% confidence interval = 0.631 to 1.114

APPENDIX 12 – QUALITY APPRAISAL FORM: ECONOMIC EVALUATION

Reviewer Initials	Ref ID	Primary Author	Year

	Covered	Not Covered	Unclear	Non Applicable
Report Introduction				
Epidemiology and Treatment				
Prognosis				
Disease Progression				
Local Treatment Pattern				
Economic Impact				
Study Drug				
Hypothesis				
Objectives				
Design				
Analytical Framework				
Patient Population				
Comparator				
Analytical Horizon				
Perspective				
Setting				
Clinical Measures				
Effectiveness Measures				
Economic Measures				
Methods				
Healthcare System				
Model Description				
Data Sources				
Data Collection				
Probabilities				
Healthcare Use				
Data Analysis				
Sensitivity Analysis				
Discounting				
Results				
Intermediate Results				
Final Results				
Conclusion				
Discussion				
Validation and Quality Control				
Validation				
Quality Control				
Software				
Relationships				
Appendices				

Nujiten MJC, Pronk MH, Brorens MJA, et al. (1998). Reporting format for economic evaluations. Part II: Focus on Modelling Studies. *Pharmaeconomics.*14(3): 259:268.

APPENDIX 13 – QUALITY APPRAISAL FORM: QUALITATIVE STUDIES (TONG ET AL, 2007)

Reviewer Initials	Ref ID	Primary Author	Year

	Covered	Not Covered	Unclear	N/A
Domain 1: Research Team and Reflexivity				
Personal Characteristics				
1. Interviewer/Facilitator				
2. Credentials				
3. Occupation				
4. Gender				
5. Experience and Training				
Relationship with Participants				
6. Relationship Established				
7. Participant Knowledge of the Interviewer				
8. Interviewer Characteristics				
Domain 2: Study Design				
Theoretical Framework				
9. Methodological Orientation and Theory				
Participant Selection				
10. Sampling				
11. Method of Approach				
12. Sample Size				
13. Non-Participation				
Setting				
14. Setting of Data Collection				
15. Presence of Non-Participants				
16. Description of Sample				
Data Collection				
17. Interview Guide				
18. Repeat Interviews				
19. Audio/Visual Recording				
20. Field Notes				
21. Duration				
22. Data Saturation				
23. Transcripts Returned				
Domain 3: Analysis and Findings				
Data Analysis				
24. Number of Data Coders				
25. Description of the Coding Tree				
26. Derivation of Themes				
27. Software				
28. Participant Checking				
Reporting				
29. Quotations Presented				

		30. Data and Finding Consistent				
		31. Clarity of Major Themes				
		32. Clarity of Minor Themes				

Tong A, Sainsbury P, and Craig J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care.*19(6):349-357.

APPENDIX 14 – QUALITY APPRAISAL FORM: QUALITATIVE STUDIES(CASP)

Reviewer Initials	Ref ID	Primary Author	Year

Screening Questions	Yes	No
1. Was there a clear statement of the aims of the research?		
2. Is a qualitative methodology appropriate?		
Detailed Questions		
3. Was the research design appropriate to address the aims of the research?		
Comments		
4. Was the recruitment strategy appropriate to the aims of the research?		
Comments		
5. Were the data collected in a way that addressed the research issue?		
Comments		
6. Has the relationship between researcher and participants been adequately considered?		

Comments

7. Have ethical issues been taken into consideration?

Comments

8. Was the data analysis sufficiently rigorous?

Comments

9. Is there a clear statement of findings?

Comments

10. How valuable is the research?
Comments

Additional Comments:

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.*Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view

APPENDIX 15 – INITIAL DATA EXTRACTION FORM: QUANTITATIVE STUDIES

Reviewer Initials	Ref ID	Primary Author	Year

Bibliographic Information	
Search Strategy	□ Original □ Qualitative □ +1 (Related Articles to Pineros 2010 on PubMed) □ +1 (References of Articles from Original Search Strategy)
Authors	_____ _____ _____ _____ _____
Year	_____
Title	_____ _____ _____ _____ _____
Journal Name	_____ _____
Volume	_____
Issue	_____
Pages	_____
Article Characteristics	
Type of Article	□ Decision Analytical Modelling □ Other: _____
Analytical Framework	□ Cost-Minimization □ Cost- Effectiveness □ Cost-Utility □ Cost-Benefit □ Non-Applicable

Perspective	□ Society □ Healthcare System □ Third Party Payer □ Other: _____ □ Non-Applicable	
Patient Population	*Gender*	□ Male □ Female
	Age	_____
	Number	_____
Type of HPV Vaccine	□ HPV 16 and 18 (Cervarix) □ HPV 6, 11, 16, and 18 (Gardasil) □ Other: _____	
Vaccine Efficacy	_____	
Vaccine Coverage	_____	
Vaccine Duration	_____	
Comparator	□ Screening Program (Conventional Cytology - Papanicolaou Test) □ Screening Program (Liquid-Based Cytology) □ No Program □ Other: _____	
Setting	_____	
Horizon	_____	
Type of Costs Included	□ Direct Medical Costs □ Direct Non-Medical Costs □ Indirect Costs □ Non-Applicable	
Currency	□ Specifiy: _____ □ Non-Applicable	
Discounting	□ Costs - specify rate: _____ □ Benefits - specify rate: _____ □ None □ Non-Applicable	

Element of Uncertainty
Who was the audience of the economic evaluation? (e.g. decision-makers)
What was health care dilemma in regards to implementing the HPV vaccine?
What were the types or sources of uncertainty?
Was it compared to different levels of uncertainty? If so, what were they?

What was the final recommendation?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Please indicate the number which corresponds to the following statement: "The researchers were confident with the final recommendation."

Highly Disagree	**1----------2----------3----------4----------5----------6----------7**	Highly Agree

APPENDIX 16 – INITIAL DATA EXTRACTION FORM: QUALITATIVE STUDIES

Reviewer Initials	Ref ID	Primary Author	Year

Bibliographic Information	
Search Strategy	☐ Original ☐ Qualitative ☐ +1 (Related Articles to Pineros 2010 on PubMed) ☐ +1 (References of Articles from Original Search Strategy)
Authors	
Year	
Title	
Journal Name	
Volume	
Issue	
Pages	
Article Characteristics	
Methodology	
Geographical Setting	
Time Period	
Study Participants	
Sampling	☐ Purposive ☐ Snow-Ball ☐ Random ☐ Other: _____
Sample Size/Characteristics (include supporting evidence from the article)	
Data Collection Methods (include supporting evidence from the article)	
Data Analysis Methods (include supporting evidence from the article)	
Element of Uncertainty	
List the types of uncertainty directly/indirectly involved within the implementation of the human papilloma virus vaccine.	
Please address the following questions on a separate sheet: *How was each type of uncertainty conceptualized? What was the supporting evidence (include*	

quotes from the article)?
What was the source of each type of uncertainty within the decision-making process? Please include rationalization and supporting evidence from the article.

APPENDIX 17 – FINAL DATA EXTRACTION FORM: QUANTITATIVE STUDIES

Reviewer Initials	Ref ID	Primary Author	Year

Bibliographic Information		
Search Strategy	☐ Original ☐ Qualitative ☐ +1 (Related Articles to Pineros 2010 on PubMed) ☐ +1 (References of Articles from Original Search Strategy)	
Authors		
Year		
Title		
Journal Name		
Volume		
Issue		
Pages		
Article Characteristics		
Type of Article	☐ Decision Analytical Model ☐ Other:	
Analytical Framework	☐ Cost-Minimization ☐ Cost- Effectiveness ☐ Cost-Utility ☐ Cost-Benefit ☐ Non-Applicable	
Perspective	☐ Society ☐ Healthcare System ☐ Third Party Payer ☐ Other: ☐ Non-Applicable	
Patient Population	*Gender*	☐ Male ☐ Female
	Age	
	Number	
Type of HPV Vaccine	☐ HPV 16 and 18 (Cervarix) ☐ HPV 6, 11, 16, and 18 (Gardasil) ☐ Other:	
Vaccine Efficacy		
Vaccine Coverage		

Vaccine Duration	
Comparator	☐ Screening Program (Conventional Cytology - Papanicolaou Test) ☐ Screening Program (Liquid-Based Cytology) ☐ No Program ☐ Other:
Setting	
Horizon	
Type of Costs Included	☐ Direct Medical Costs ☐ Direct Non-Medical Costs ☐ Indirect Costs ☐ Non-Applicable
Currency	☐ Specify: ☐ Non-Applicable
Discounting	☐ Costs - specify rate: ☐ Benefits - specify rate: ☐ None ☐ Non-Applicable
Element of Uncertainty	
Who was the audience of the economic evaluation? (e.g. decision-makers)	
What was health care dilemma in regards to implementing the HPV vaccine?	
What were the types or sources of uncertainty significant to the decision-makers?	
Was it compared to different levels of uncertainty? If so, what were they?	
What was the final recommendation?	
Please indicate the number which corresponds to the following statement: "The researchers were confident with the final recommendation." ☐ Non-Applicable	

Highly Disagree	**1----------2----------3----------4----------5----------6----------7**	Highly Agree

APPENDIX 18 – FINAL DATA EXTRACTION FORM: QUALITATIVE STUDIES

Data Extraction Form – Qualitative

Reviewer Initials	Ref ID	Primary Author	Year

Bibliographic Information	
Search Strategy	☐ Original ☐ Qualitative ☐ +1 (Related Articles to Pineros 2010 on PubMed) ☐ +1 (References of Articles from Original Search Strategy)
Authors	
Year	
Title	
Journal Name	
Volume	
Issue	
Pages	
Article Characteristics	
Geographical Setting	
Time Period	
Sampling	☐ Purposive ☐ Snow-Ball ☐ Random ☐ Other: _____
Sample Size/Characteristics (include supporting evidence from the article)	
Data Collection Methods (include supporting evidence from the article)	
Data Analysis Methods (include supporting evidence from the article)	
Element of Uncertainty	
List the types of uncertainty directly/indirectly involved within the implementation of the human papilloma virus vaccine. If possible, please discuss how each type of uncertainty was conceptualized, with supportive evidence from the article.	

APPENDIX 19 – SPSS OUTPUT: CHI-SQUARE TESTS

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Final Decision * Age of Vaccination	16	100.0%	0	.0%	16	100.0%
Final Decision * Cost of Vaccine	16	100.0%	0	.0%	16	100.0%
Final Decision * Vaccine Coverage	16	100.0%	0	.0%	16	100.0%
Final Decision * Cross Protection	16	100.0%	0	.0%	16	100.0%
Final Decision * Duration of Protection	16	100.0%	0	.0%	16	100.0%
Final Decision * Efficacy of Vaccine	16	100.0%	0	.0%	16	100.0%

*FINAL DECISION * AGE OF VACCINATION*

Crosstab

Count

		Age of Vaccination		
		Yes	No	Total
Final Decision	Pro Implementation	2	9	11
	Neither Pro nor Against	2	3	5
Total		4	12	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.873[a]	1	.350		
Continuity Correction[b]	.097	1	.755		
Likelihood Ratio	.834	1	.361		
Fisher's Exact Test				.547	.365
Linear-by-Linear Association	.818	1	.366		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 1.25.

b. Computed only for a 2x2 table

*FINAL DECISION * COST OF VACCINE*

Crosstab

Count

		Cost of Vaccine		
		Yes	No	Total
Final Decision	Pro Implementation	6	5	11
	Neither Pro nor Against	1	4	5
Total		7	9	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.667[a]	1	.197		
Continuity Correction[b]	.559	1	.455		
Likelihood Ratio	1.768	1	.184		
Fisher's Exact Test				.308	.231
Linear-by-Linear Association	1.563	1	.211		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 2.19.
b. Computed only for a 2x2 table

*FINAL DECISION * VACCINE COVERAGE*

Crosstab

Count

		Vaccine Coverage		
		Yes	No	Total
Final Decision	Pro Implementation	3	8	11
	Neither Pro nor Against	2	3	5
Total		5	11	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.259[a]	1	.611		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.254	1	.614		
Fisher's Exact Test				1.000	.516
Linear-by-Linear Association	.243	1	.622		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 1.56.

b. Computed only for a 2x2 table

*FINAL DECISION * CROSS PROTECTION*

Crosstab

Count

		Cross Protection		
		Yes	No	Total
Final Decision	Pro Implementation	1	10	11
	Neither Pro nor Against	1	4	5
Total		2	14	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.374[a]	1	.541		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.351	1	.554		
Fisher's Exact Test				1.000	.542
Linear-by-Linear Association	.351	1	.554		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is .63.

b. Computed only for a 2x2 table

*FINAL DECISION * DURATION OF PROTECTION*

Crosstab

Count

		Duration of Protection		
		Yes	No	Total
Final Decision	Pro Implementation	9	2	11
	Neither Pro nor Against	4	1	5
Total		13	3	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.007[a]	1	.931		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.007	1	.931		
Fisher's Exact Test				1.000	.705
Linear-by-Linear Association	.007	1	.933		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is .94.

b. Computed only for a 2x2 table

*FINAL DECISION * EFFICACY OF VACCINE*

Crosstab

Count

		Efficacy of Vaccine		
		Yes	No	Total
Final Decision	Pro Implementation	2	9	11
	Neither Pro nor Against	1	4	5
Total		3	13	16

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.007[a]	1	.931		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.007	1	.931		
Fisher's Exact Test				1.000	.705
Linear-by-Linear Association	.007	1	.933		
N of Valid Cases	16				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is .94.

b. Computed only for a 2x2 table

APPENDIX 20 – REVIEWER AGREEMENT/DISAGREEMENT – QUANTITATIVE STUDIES

	Barnabas 2006	Berchtold 2010	Boot 2007	Brisson 2007	French 2007	Goldie 2004	Goldie 2008	Hughes 2002	Insinga 2007	Kohli 2007
Report Introduction										
Epidemiology and Treatment	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*
Prognosis	*Agree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*
Disease Progression	*Agree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Local Treatment Pattern	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Economic Impact	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Study Drug	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*
Hypothesis	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Objectives	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Design										
Analytical Framework	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Patient Population	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Comparator	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Analytical Horizon	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*
Perspective	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Setting	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Clinical Measures	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Effectiveness Measures	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Economic Measures	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*
Methods										
Healthcare System	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*
Model Description	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Data Sources	*Agree*	*Disagree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Data Collection	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Probabilities	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*
Healthcare Use	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Data Analysis	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Agree*	*Agree*	*Disagree*
Sensitivity Analysis	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Discounting	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Results										
Intermediate Results	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Final Results	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Conclusion	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Discussion	*Agree*	*Disagree*	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*

Validation and Quality Control										
Validation	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Quality Control	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Software	*Disagree*	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Relationships	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*
Appendices	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*

CONTINUED: REVIEWER AGREEMENT/DISAGREEMENT – QUANTITATIVE STUDIES

	Kulasingam 2003	Reynales-Shigematsu 2009	Rogoza 2008	Sanders 2003	Suarez 2008	Taira 2004
Report Introduction						
Epidemiology and Treatment	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*	*Agree*
Prognosis	*Disagree*	*Agree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Disease Progression	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Local Treatment Pattern	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Economic Impact	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Study Drug	*Agree*	*Agree*	*Disagree*	*Disagree*	*Agree*	*Agree*
Hypothesis	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Objectives	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Design						
Analytical Framework	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Patient Population	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Comparator	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Analytical Horizon	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Perspective	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Setting	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Clinical Measures	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*
Effectiveness Measures	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Economic Measures	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*
Methods						
Healthcare System	*Agree*	*Agree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Model Description	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Data Sources	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Data Collection	*Disagree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Probabilities	*Disagree*	*Agree*	*Agree*	*Agree*	*Agree*	*Disagree*

Healthcare Use	*Agree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Data Analysis	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Disagree*	*Agree*
Sensitivity Analysis	*Agree*	*Agree*	*Disagree*	*Agree*	*Agree*	*Agree*
Discounting	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Results						
Intermediate Results	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Disagree*	*Disagree*
Final Results	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Conclusion	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Discussion	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Validation and Quality Control						
Validation	*Disagree*	*Disagree*	*Agree*	*Disagree*	*Agree*	*Agree*
Quality Control	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Software	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Relationships	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*
Appendices	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*	*Agree*

APPENDIX 21 – QUALITY APPRAISAL RESULTS OF QUANTITATIVE STUDIES

	Barnabas 2006	Berchold 2010	Boot 2007	Brisson 2007	French 2007	Goldie 2004	Goldie 2008	Hughes 2002	Insinga 2007	Kohli
Report Introduction										
Epidemiology and Treatment	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*UN*	*CV*
Prognosis	*CV*	*CV*	*UN*	*NC*	*NC*	*CV*	*CV*	*CV*	*UN*	*CV*
Disease Progression	*CV*	*CV*	*UN*	*NC*	*NC*	*CV*	*UN*	*NC*	*NC*	*NC*
Local Treatment Pattern	*CV*	*NC*	*NC*	*NC*	*NC*	*CV*	*CV*	*NC*	*UN*	*NC*
Economic Impact	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*CV*	*CV*	*NC*	*NC*
Study Drug	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*UN*	*CV*
Hypothesis	*NC*	*NC*	*NC*	*CV*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Objectives	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Design										
Analytical Framework	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*N/A*
Patient Population	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Comparator	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Analytical Horizon	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Perspective	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*N/A*
Setting	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Clinical Measures	*NC*	*CV*	*CV*	*CV*	*NC*	*CV*	*NC*	*NC*	*NC*	*NC*
Effectiveness Measures	*CV*	*NC*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Economic Measures	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*N/A*
Methods										
Healthcare System	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*NC*	*CV*	*N/A*	*CV*	*N/A*
Model Description	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*	*CV*
Data Sources	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*
Data Collection	*CV*	*CV*	*NC*	*CV*	*NC*	*CV*	*CV*	*CV*	*CV*	*NC*
Probabilities	*CV*	*CV*	*UN*	*UN*	*CV*	*CV*	*NC*	*UN*	*CV*	*CV*
Healthcare Use	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*NC*	*N/A*	*CV*	*N/A*
Data Analysis	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*
Sensitivity Analysis	*N/A*	*N/A*	*NC*	*CV*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*CV*
Discounting	*N/A*	*N/A*	*CV*	*CV*	*N/A*	*CV*	*NC*	*N/A*	*CV*	*N/A*
Results										
Intermediate Results	*CV*	*CV*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Final Results	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Conclusion	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Discussion	*CV*	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*	*CV*	*CV*	*CV*

Validation and Quality Control										
Validation	*NC*	*NC*	*NC*	*NC*	*NC*	*CV*	*NC*	*NC*	*CV*	*UN*
Quality Control	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Software	*CV*	*UN*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Relationships	*NC*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*	*NC*	*CV*
Appendices	*CV*	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*CV*	*NC*	*NC*

Abbreviations
CV = Covered
NC = Not Covered
UN = Unclear
N/A = Non-Applicable

CONTINUED: QUALITY APPRAISAL RESULTS OF QUANTITATIVE STUDIES

	Kulasingam 2003	Reynales-Shigematsu 2009	Rogoza 2008	Sanders 2003	Suarez 2008	Taira
Report Introduction						
Epidemiology and Treatment	*CV*	*CV*	*CV*	*CV*	*NC*	*CV*
Prognosis	*NC*	*CV*	*CV*	*UN*	*NC*	*NC*
Disease Progression	*NC*	*NC*	*CV*	*NC*	*NC*	*NC*
Local Treatment Pattern	*NC*	*CV*	*NC*	*NC*	*NC*	*NC*
Economic Impact	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Study Drug	*CV*	*CV*	*UN*	*UN*	*CV*	*CV*
Hypothesis	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
Objectives	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Design						
Analytical Framework	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Patient Population	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Comparator	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Analytical Horizon	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Perspective	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Setting	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Clinical Measures	*CV*	*CV*	*UN*	*NC*	*NC*	*NC*
Effectiveness Measures	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*

	Economic Measures	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Methods							
	Healthcare System	*CV*	*CV*	*CV*	*CV*	*NC*	*NC*
	Model Description	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
	Data Sources	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
	Data Collection	*CV*	*CV*	*UN*	*CV*	*CV*	*CV*
	Probabilities	*NC*	*CV*	*CV*	*CV*	*CV*	*CV*
	Healthcare Use	*CV*	*CV*	*CV*	*UN*	*CV*	*CV*
	Data Analysis	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
	Sensitivity Analysis	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
	Discounting	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Results							
	Intermediate Results	*NC*	*NC*	*CV*	*NC*	*NC*	*NC*
	Final Results	*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Conclusion		*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Discussion		*CV*	*CV*	*CV*	*CV*	*CV*	*CV*
Validation and Quality Control							
	Validation	*CV*	*CV*	*NC*	*CV*	*NC*	*CV*
	Quality Control	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*
	Software	*NC*	*NC*	*NC*	*CV*	*CV*	*CV*
Relationships		*NC*	*CV*	*CV*	*CV*	*CV*	*CV*
Appendices		*CV*	*NC*	*CV*	*CV*	*NC*	*CV*

Abbreviations
CV = Covered
NC = Not Covered
UN = Unclear
N/A = Non-Applicable

APPENDIX 22 – REVIEWER AGREEMENT/DISAGREEMENT: QUALITATIVE STUDIES (TONG ET AL, 2007)

Domain 1: Research Team and Reflexivity	Colgrove 2010	Harries 2009	Pineros 2010	Tsui 2009
Personal Characteristics				
1. Interviewer/Facilitator	*Agree*	*Disagree*	*Agree*	*Agree*
2. Credentials	*Agree*	*Disagree*	*Agree*	*Agree*
3. Occupation	*Agree*	*Disagree*	*Agree*	*Agree*
4. Gender	*Agree*	*Agree*	*Agree*	*Agree*
5. Experience and Training	*Agree*	*Disagree*	*Agree*	*Agree*
Relationship with Participants				
6. Relationship Established	*Disagree*	*Agree*	*Agree*	*Agree*
7. Participant Knowledge of the Interviewer	*Disagree*	*Agree*	*Agree*	*Agree*
8. Interviewer Characteristics	*Disagree*	*Disagree*	*Agree*	*Disagree*
Domain 2: Study Design				
Theoretical Framework				
9. Methodological Orientation and Theory	*Disagree*	*Disagree*	*Disagree*	*Agree*
Participant Selection				
10. Sampling	*Agree*	*Agree*	*Disagree*	*Agree*
11. Method of Approach	*Disagree*	*Agree*	*Agree*	*Agree*
12. Sample Size	*Agree*	*Agree*	*Agree*	*Agree*
13. Non-Participation	*Disagree*	*Agree*	*Disagree*	*Agree*
Setting				
14. Setting of Data Collection	*Agree*	*Agree*	*Agree*	*Agree*
15. Presence of Non-Participants	*Disagree*	*Agree*	*Disagree*	*Disagree*
16. Description of Sample	*Disagree*	*Agree*	*Disagree*	*Disagree*
Data Collection				
17. Interview Guide	*Disagree*	*Agree*	*Disagree*	*Disagree*
18. Repeat Interviews	*Agree*	*Agree*	*Agree*	*Agree*
19. Audio/Visual Recording	*Disagree*	*Agree*	*Agree*	*Agree*
20. Field Notes	*Disagree*	*Disagree*	*Disagree*	*Agree*
21. Duration	*Agree*	*Agree*	*Agree*	*Agree*
22. Data Saturation	*Agree*	*Agree*	*Agree*	*Agree*
23. Transcripts Returned	*Agree*	*Agree*	*Agree*	*Agree*
Domain 3: Analysis and Findings				

	Data Analysis				
	24. Number of Data Coders	*Disagree*	*Disagree*	*Disagree*	*Agree*
	25. Description of the Coding Tree	*Agree*	*Agree*	*Agree*	*Agree*
	26. Derivation of Themes	*Agree*	*Disagree*	*Agree*	*Disagree*
	27. Software	*Agree*	*Agree*	*Agree*	*Agree*
	28. Participant Checking	*Disagree*	*Agree*	*Disagree*	*Agree*
	Reporting				
	29. Quotations Presented	*Agree*	*Agree*	*Agree*	*Agree*
	30. Data and Finding Consistent	*Agree*	*Agree*	*Agree*	*Agree*
	31. Clarity of Major Themes	*Agree*	*Agree*	*Agree*	*Agree*
	32. Clarity of Minor Themes	*Agree*	*Agree*	*Agree*	*Agree*

APPENDIX 23 – QUALITY APPRAISAL RESULTS OF QUALITATIVE STUDIES (TONG ET AL, 2007)

Domain 1: Research Team and Reflexivity			Colgrove 2010	Harries 2009	Pineros 2010	Tsui 2009
	Personal Characteristics					
		1. Interviewer/Facilitator	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		2. Credentials	*Not Covered*	*Unclear*	*Not Covered*	*Not Covered*
		3. Occupation	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		4. Gender	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		5. Experience and Training	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
	Relationship with Participants					
		6. Relationship Established	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		7. Participant Knowledge of the Interviewer	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		8. Interviewer Characteristics	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
Domain 2: Study Design						
	Theoretical Framework					
		9. Methodological Orientation and Theory	*Covered*	*Covered*	*Covered*	*Covered*
	Participant Selection					
		10. Sampling	*Covered*	*Covered*	*Covered*	*Covered*
		11. Method of Approach	*Covered*	*Not Covered*	*Covered*	*Not Covered*
		12. Sample Size	*Covered*	*Covered*	*Covered*	*Covered*
		13. Non-Participation	*Not Covered*	*Not Covered*	*Covered*	*Not Covered*
	Setting					
		14. Setting of Data Collection	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		15. Presence of Non-Participants	*Covered*	*Not Covered*	*Covered*	*Not Covered*
		16. Description of Sample	*Unclear*	*Covered*	*Unclear*	*Unclear*
	Data Collection					
		17. Interview Guide	*Covered*	*Covered*	*Covered*	*Covered*
		18. Repeat Interviews	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		19. Audio/Visual Recording	*Covered*	*Covered*	*Covered*	*Not Covered*

		20. Field Notes	*Covered*	*Not Covered*	*Covered*	*Not Covered*
		21. Duration	*Covered*	*Not Covered*	*Covered*	*Not Covered*
		22. Data Saturation	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		23. Transcripts Returned	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
Domain 3: Analysis and Findings						
	Data Analysis					
		24. Number of Data Coders	*Covered*	*Unclear*	*Covered*	*Not Covered*
		25. Description of the Coding Tree	*Not Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		26. Derivation of Themes	*Covered*	*Unclear*	*Covered*	*Not Covered*
		27. Software	*Covered*	*Not Covered*	*Not Covered*	*Not Covered*
		28. Participant Checking	*Covered*	*Not Covered*	*Not Covered*	*Not Covered*
	Reporting					
		29. Quotations Presented	*Covered*	*Covered*	*Covered*	*Covered*
		30. Data and Finding Consistent	*Covered*	*Covered*	*Covered*	*Covered*
		31. Clarity of Major Themes	*Covered*	*Covered*	*Covered*	*Covered*
		32. Clarity of Minor Themes	*Covered*	*Covered*	*Covered*	*Covered*

APPENDIX 24A – QUALITY APPRAISAL (CASP) RESULTS OF QUALITATIVE STUDIES: COLGROVE 2010

Quality Appraisal Form

Qualitative Studies

Reviewer Initials	Ref ID	Primary Author	Year
FINAL	*1712*	*COLGROVE*	*2010*

Screening Questions	Yes	No
1. Was there a clear statement of the aims of the research?	BR	
2. Is a qualitative methodology appropriate?	BR	
Detailed Questions		
3. Was the research design appropriate to address the aims of the research?		
Comments *TH: Though the researchers didn't justify their reasoning behind their decisions regarding research design, they provided a supplementary appendix.* *SG: However, the reasoning for the design was not addressed in the paper. The authors could have elaborated on the specifics of the study design and why it was appropriate.*		
4. Was the recruitment strategy appropriate to the aims of the research?		
Comments *TH: The states were selected in a systematic manner. They had to have been actively deliberating about the vaccine. From there, the six included states were picked on the basis of political and geographical diversity. The individuals who were interviewed were also selected systematically with details well specified in the appendix. Snowball sampling led to the inclusion of four additional key informants.* *SG: The authors briefly addressed how and why the participants were selected.*		
5. Were the data collected in a way that addressed the research issue?		
Comments *TH: Though the researchers did not provide justification for their data collection, the process is well described and seems methodologically coherent. The interviews were semi-structured and were conducted on both an individual and group basis. The methods do not seem to have been modified nor did they adhere to data-saturation. However, these concepts were not explicitly stated. In terms of the form, the interviews were both audio-recorded and transcribed in full.* *SG: The setting for data collection was neither justified nor discussed. How data were collected was briefly addressed. We know that some interviews were done with only one respondent in the room and some were done with two to four. The researchers did not justify the methods chosen, nor did theymake the methods explicit (ie if an interview guide was used). No details were given if the methods were modified during the study. The form of data is unclear (e.g. tape recordings, video material, notes etc). However, transcripts were used for data abstraction. The researchers did not discuss data saturation.*		
6. Has the relationship between researcher and participants been adequately considered?		
Comments *TH: There was no consideration of reflexivity.* *SG: The researcher did not critically examine their own role, potential bias and influence.*		
7. Have ethical issues been taken into consideration?		
Comments		

TH: The recruitment scripts underwent approval by the appropriate institutional review boards. Oral informed consent was attained and matters of confidentiality were discussed. *SG: Ethics was not discussed in this article. The following issues were not addressed:* *– if there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained* *– if the researcher has discussed issues raised by the study (e. g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)*
8. Was the data analysis sufficiently rigorous?
Comments *TH: A decent description of the process is provided in the appendix. Content thematic analysis was used with a shallow description of those involved and the process that was undertaken. Though they used coding schemes, there is not a detailed description provided. Even though the authors provided sufficient data to support their conclusions, they did not state how they decided on the final results. Contradictory points are presented but there is no description of reflexivitiy.* *SG: There was not an in-depth description of the analysis process, however, a very brief description was given. Thematic analysis was used. The researchers do not explain how the data presented were selected from the original sample to demonstrate the analysis process. Quotations were provided to support the findings. Contradictory data were rarely taken into account. The researchers did not critically examine their own role, potential bias and influence duringanalysis and selection of data for presentation.*
9. Is there a clear statement of findings?
Comments *TH: Though the findings are explicit, there is no discussion of evidence that was against their arguments. However, three authors conducted the thematic analysis, thereby adding to the credibility. Furthermore, the answers provided completely address the objectives of the study.* *SG: The findings are explicit. There is adequate discussion of the evidence for the researcher's arguments, but not against. The credibility of the findings was not addressed (e.g. triangulation, respondent validation, more than one analyst) but the findings were discussed in relation to the original research questions.*
10. How valuable is the research?
Comments *TH: The authors state that there are ore concerns at play within the decision-making process than adolescent sexuality, which has been the focus of previous research. However, there is no discussion of new areas of research or the transferability of the study. Due to the lack of research within the field, specifically qualitative, this study is still a valuable source of data.* *SG: The researchers discuss the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature). Future directions for research were not discussed. The researchers did not discuss whether or how the findings can be transferred to other populations or considered other ways the research may be used.*

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.*Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view

APPENDIX 24B – QUALITY APPRAISAL (CASP) RESULTS OF QUALITATIVE STUDIES: HARRIES 2009

Quality Appraisal Form

Qualitative Studies

Reviewer Initials	Ref ID	Primary Author	Year
FINAL	*2184*	*HARRIES*	*2009*

Screening Questions	Yes	No
1. Was there a clear statement of the aims of the research?	BR	
2. Is a qualitative methodology appropriate?	BR	
Detailed Questions		
3. Was the research design appropriate to address the aims of the research?		
Comments *TH: The authors provide no justification for the design that they selected.* *SG: The researchers eluded to the justification of the design, but did not discuss exactly how they decided which methods to use.*		
4. Was the recruitment strategy appropriate to the aims of the research?		
Comments *TH: The only information provided regarding recruitment was that it was conducted "through purposive and snow ball sampling". Though this method would be suitable for the purposes of this study, I am unable to discern so due to the lack of information.* *SG: The researchers did not explain how the participants were selected. They did not explain why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study. The only discussion around recruitment was the description of the study population.*		
5. Were the data collected in a way that addressed the research issue?		
Comments *TH: The interviews were "semi-structured, open-ended, and probing". A list of key topics discussed is also provided. The interviews were "digitally recorded and transcribed verbatim". Beyond this, there are no explicit details about the methodology nor is there any justification provided. There is nothing within the article about data saturation.* *SG: The setting for data collection was not addressed. Data were collected via in-depth interviews (health care providers, policy makers and key policy members at national and provincial levels) and focus group discussions (community members). The justification for the methods chosen was not explained. The researcher made the methods explicit saying "Interview guides were semi-structured, open-ended and probing… Interview guides and consent forms were piloted to check for language appropriateness and understanding." If methods were modified during the study, it was not explained. The form of data was clear. "Interviews and focus group discussions were digitally recorded and transcribed verbatim." The researcher did not discuss saturation of data.*		
6. Has the relationship between researcher and participants been adequately considered?		
Comments *TH: There was no discussion.* *SG: The researchers did not examine their own role, potential bias and influence during: formulation of research questions, data collection, including sample recruitment and choice of location. They also did*		

not discuss how they responded to events during the study and whether they considered the implications of any changes in the research design.
7. Have ethical issues been taken into consideration?
Comments *TH: Ethics approval was attained from the appropriate review boards. The participants provided written consent and discussed matters of confidentiality and anonymity with the researchers. Though the authors could have provided more details, the depth was sufficient.* *SG: The only detail of how the research was explained to participants is that written and informed consent was obtained. It is unknown if ethical standards were maintained throughout the study. Researchers ensured that individual data would be confidential and anonymous. Approval has been sought from the ethics committee of the University of Cape Town's Research Ethics Committee and the Western Cape Province and City of Cape Town Health.*
8. Was the data analysis sufficiently rigorous?
Comments *TH: The data analysis section was very superficial. Content analysis was conducted without any detailed descriptions of the process itself. Difficult to assess the quality with the amount of information that is presented.* *SG: Thematic analysis was used. It is clear how the categories/themes were derived from the data. The researchers explain how the data was selected from the original sample. Sufficient data are presented to support the findings. Contradictory data are not taken into account.*
9. Is there a clear statement of findings?
Comments *TH: The findings clearly and explicitly answer the questions that were posed by the objectives. However, evidence that is contradictory to the arguments is not present. There is also no discussion of the findings' credibility.* *SG: The findings are explicit but there is not an adequate discussion of the evidence against the researcher's arguments. The researcher has not discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst). The findings are discussed in relation to the original research questions.*
10. How valuable is the research?
Comments *TH: There is a clear description of how the study contributes to the field and future steps that need to be undertaken.* *SG: The researchers discuss the contribution the study makes to existing knowledge or understanding and identify new areas where research is necessary. There's also a discussion of how the findings can be transferred to other populations or considered other ways the research may be used.*

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.*Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view

APPENDIX 24C – QUALITY APPRAISAL (CASP) RESULTS OF QUALITATIVE STUDIES: PINEROS 2010

Quality Appraisal Form

Qualitative Studies

Reviewer Initials	Ref ID	Primary Author	Year
FINAL	*1352*	*PINEROS*	*2010*

Screening Questions	Yes	No
1. Was there a clear statement of the aims of the research?	BR	
2. Is a qualitative methodology appropriate?	BR	
Detailed Questions		
3. Was the research design appropriate to address the aims of the research?		
Comments *TH: Though a **concrete** justification is not provided for the research design, it seems as the appropriate methodology was used to address the goals of the research study.* *SG: The researchers justified the research design by the following: "We developed an exploratory, qualitative study in four Colombian cities, selected to exemplify the socio-cultural diversity of the nation, thus providing an opportunity to come into contact with different attitudes on HPV vaccine acceptance."*		
4. Was the recruitment strategy appropriate to the aims of the research?		
Comments *TH: The four cities were selected systematically to ensure the inclusion of the two developed and two developing ones. From each study, four people were asked to be interviewed (purposive sampling). The authors also addressed why two informants were unable to participate.* *SG: The researcher explained how the participants were selected (by phone) as well why they were the most appropriate to provide access to the knowledge sought by the study. Recruitment about those who wished to not participate was not discussed.*		
5. Were the data collected in a way that addressed the research issue?		
Comments *TH: The interviews were semi-structured and tape-recorded transcribed verbatim with the addition of notes. The topic guide used categories that were recommended by the Pan American Health Organizations. The methods were not justified and data-saturation was not mentioned. Credibility of the data was assured by triangulation with informant groups, diverse sources, and multiple researchers.* *SG: The setting for data collection was not described. Data were collected via personal interview. The method chosen was not justified. Data collection methods were explicit. They used semi-structured interviews and interviews took place using a guideline that covered the basic categories recommended by the PAHO. If methods were modified during the study, it was not explained. The form of data is clear (tape recordings). Data saturation was not discussed.*		
6. Has the relationship between researcher and participants been adequately considered?		
Comments *TH: No discussion.* *SG: The researchers did not critically examine their own role.*		
7. Have ethical issues been taken into consideration?		
Comments		

TH: The study was part of the "Knowledge and Acceptability of the HPV Vaccine among Parents of Adolescents, Physicians, and Decision-Makers in Colombia", which was approved by the National Cancer Institute Ethical Committee in September 2007. No specific mention of ethics apporoval. However, participants provided verbal consent and were assured of confidentiality and voluntary participation. *SG: The participants were informed that the purpose of the meeting would be to discuss a project related to cervical cancer control. However, in order to avoid inducing biased responses, no specific mention of the HPV vaccine was made during this initial phone conversation. The researchers discussed issues around informed consent and confidentiality. They did not explain the effects of the study on the participants during and after. Approval was sought from the ethics committee "approved by the National Cancer Institute Ethical Committee in September 2007" as a part of a larger study.*
8. Was the data analysis sufficiently rigorous?
Comments *TH: Clear description of the content analysis process, which could have been improved by actually providing the conceptual and relational maps. Though sufficient data was presented to support the findings, there was a lack of contradictory information. No critical examination of the researchers' own role, potential bias, and influence.* *SG: There is an in-depth description of the analysis process: thematic analysis was used. It is clear how the categories/themes were derived from the data* "open reading, codification, structural analysis, and critical interpretation." *Sufficient data are presented to support the findings and contradictory data are taken into account. The researchers did not examine their own role, potential bias and influence during analysis and selection of data for presentation.*
9. Is there a clear statement of findings?
Comments *TH: Findings are explicitly stated with sufficient evidence to support them. They also addressed the questions that were posed by the objective. Credibility was addressed (Refer to answer of #8).* *SG: The findings are explicit. There is adequate discussion of the evidence. The researcher used triangulation, respondent validation. The findings are discussed in relation to the original research questions.*
10. How valuable is the research?
Comments *TH: The contributions are discussed in relation to previous trends. Furthermore, the authors discuss how these results could aid the integration of the HPV vaccine within Colombia. The transferability of this research to other Latin countries also accounted for.* *SG: The researchers discuss the contribution the study makes to existing knowledge and also identify new areas where research is necessary. They also discuss transferability.*

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.*Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view

APPENDIX 24D – QUALITY APPRAISAL (CASP) RESULTS OF QUALITATIVE STUDIES: TSUI 2009

Quality Appraisal Form

Qualitative Studies

Reviewer Initials	Ref ID	Primary Author	Year
FINAL	*1756*	*TSUI*	*2009*

Screening Questions	Yes	No
1. Was there a clear statement of the aims of the research?	BR	
2. Is a qualitative methodology appropriate?	BR	
Detailed Questions		
3. Was the research design appropriate to address the aims of the research?		
Comments *TH: Justification is provided for the design, but the article continuously refers to other articles for more detail. It was also conducted by PATH (a credible source).* *SG: The research design was not justified.*		
4. Was the recruitment strategy appropriate to the aims of the research?		
Comments *TH: Purposive sampling was conducted to attain key informants that were appropriate to the topic at play and to the specific local regions (policy-makers vs. policy influencers). However, there is no discussion of those invited who did not choose to take part.* *SG: The researcher has explained how the participants were selected and why they were the most appropriate to provide access to the knowledge sought. There was much discussion around recruitment.*		
5. Were the data collected in a way that addressed the research issue?		
Comments *TH: The authors merely listed the topics, which were addressed without any details regarding the process itself. No indication of how the data from the in-depth interviews were transferred to the formative research technical reports that were used within the analysis. No justification was provided for any methods or setting.* *SG: The setting for data collection was not addressed. Data were collected via in-depth interviews. The researcher has justified the methods chosen. Appropriate topic guides were used depending on the interviewee. If methods were modified during the study it was not addressed. The form of data is not clear and data saturation is not discussed.*		
6. Has the relationship between researcher and participants been adequately considered?		
Comments *TH: No discussion.* *SG: The researchers did not critically examine their own role, potential bias, and influence.*		
7. Have ethical issues been taken into consideration?		
Comments *TH: Though not specifically mentioned, the researchers probably attained extensive ethics approval. After all, it was a project conducted by path, which would typically guarantee sound methodology.* *SG: Issues around ethics and consent were not addressed.*		

8. Was the data analysis sufficiently rigorous?
Comments *TH: A description of the process is present. However, it could definitely by improved by the inclusion of further details. The authors state that an "inductive" approach was used without referring to any specific method. The process is described well enough and all authors identified and reviewed the themes and subthemes multiples times. No data was presented to support the arguments. No reflexivity.* *SG: There is an in-depth description of the analysis process. Thematic analysis was used and it is clear how the categories/themes were derived. The researchers explain how the data presented were selected from the original sample to demonstrate the analysis process. Sufficient data are presented to support the findings and contradictory data are taken into account. The researcher did not critically examine their own role, potential bias and influence during analysis and selection of data for presentation.*
9. Is there a clear statement of findings?
Comments *TH: Though the findings are clearly and explicitly stated, there isn't any discussion of the actual evidence used to either support or refute them. Furthermore, the credibility of their findings wasn't discussed.* *SG: The findings are explicit and there is adequate discussion of the evidence. The researchers did not discuss the credibility of the findings (ie triangulation). However, the findings were discussed in relation to the original research questions.*
10. How valuable is the research?
Comments *TH: The results are highly valuable, specifically in terms of the HPV vaccine in the developing world.* *SG: The researchers discuss the contribution the study makes to existing knowledge and identify new areas where research is necessary. They also discuss transferability.*

Solutions for Public Health. (2010). *Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research.*Retrieved on May 22, 2011 from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf/view