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Threats to the value of Health Technology Assessment: Qualitative evidence from Canada and Poland

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ABSTRACT

Background: Health Technology Assessment is used to support the process of drug appraisal and reimbursement decisions in a variety of health systems. Examples can be found in mature Western countries, such as Canada, and in emerging economies of Central and Eastern Europe, such as Poland. The value of HTA in the process is influenced by the evidence used and the stakeholders involved.
Methods: Qualitative interviews with 29 members of two appraisal committees were held in Canada and Poland between July 2017 and March 2018. An a priori thematic framework was applied and supplemented with emergent themes.
Results: We report on the results of a core emergent theme – threats identified by respondents to the value of HTA in the formulary process. We classified these into internal threats that arise due to undue influence on the individuals involved in appraisal, and external threats that arise due to undue influence on the production of evidence.
Discussion: Findings align with previous evidence regarding political and corporate pressures on the process, and a perception of declining quality of evidence. We contribute to the discussion by highlighting the importance of motivation of experts involved in the appraisal process.
Conclusions: The recognition of internal and external threats lays the groundwork for a discussion of policies used to mitigate them. We offer suggestions about potential policy responses.

1. Background

Definitions of Health Technology Assessment (HTA) offered by a number of international bodies describe HTA as a process for the evaluation of health technologies along multiple criteria with the purpose of supporting policy decisions and often conducted by groups of experts from several disciplines [1,2].

In this paper we explore the threats to the value that HTA brings to policy in terms of informing and influencing decisions, using the examples of the pan Canadian Oncology Drug Review (pCODR) and the Polish Agency for Health Technologies Assessement and Tarriffication (AOTMiT Agencja Oceny Technologii Medycznych i Taryfikacji). We focus on two core characteristics of the HTA process: (i) multi-criteria information; and (ii) multi-disciplinary committees. Specifically, we highlight how both elements are exposed to threats that can undermine the value of HTA, as perceived by members of the committees associated with the two agencies.

The health care systems in Canada and Poland are an interesting comparison. Canada's core system is funded publically and there is no opportunity to purchase publicly funded services in the private market. The private market in Canada is supplemental, but not parallel. Poland's system is dual – parallel public and private markets exist for most health services. Canada relies on general taxation for the financing of the public system, whereas Poland's public system relies predominantly on employment based statutory health

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Table 1
Comparison of Formulary Processes in Canada and Poland.

	CANADA	POLAND
Characteristics of the Process		
Agency	CADTH - Canadian Agency for Drugs and Technologies in Health; and pCODR – pan Canadian Oncology Drug Review	AOTMiT - Agencja Oceny Technologii Medycznych i Teryfikacji (Agency for HTA and Tariffication)
Committee Name	pERC – pCODR Expert Review Committee	Transparency Council (TC)
Committee Composition	Up to 16 voting members; 8 oncologists, 1 non-oncology physician, 1 pharmacist, 3 health economists, 2 patient members, 1 alternate patient member	Full committee has 20 members, each meeting has a random selection of 10 members, 7 is quorum. Each meeting must include a representative from the National Health Fund, Ministry of Health, Office of Patient Advocate.
Authority	Recommendation	Recommendation
Scope of Review	Oncology therapies	All drugs/ therapies, medical devices, procedures, health care programs, emergency access
Meeting Frequency	Once per month	Once per week
Meeting Volume	2 to 3 submissions	7 to 10 submissions
Remuneration	Yes (amount confidential)	yes (amount confidential)
Appraisal Criteria	• Clinical benefit • Economic Evaluation • Patient-based Values • Adoption Feasibility	• Clinical efficacy analysis • Economic analysis • Analysis of the impact on the health care system
Appraisal Outcome	Vote	Vote
Phases of the Process		
Initiation of Process	Manufacturer submits application package that contains a review of clinical literature, an economic analysis, and a budget impact analysis.	Manufacturer submits application package that contains a review of clinical literature, and economic analysis and a budget impact analysis.
Health Technology Assessment	Patients are invited to submit an input form. Provinces are invited to submit an input form. External guidance panels (clinical and economic) prepare a critical analysis of the manufacturers submission. A clarification meeting is scheduled with the manufacturer once during the assessment phase.	The agency's analytical team prepares a critical analysis (Verification Analysis) of the manufacturers submission.
Health Technology Appraisal	The pCODR Expert Review Committee appraises clinical, economic, patient, and organizational criteria during an in camera meeting. A patient member of the committee is present and has a vote. Consensus is sought. Meetings take place once per month, and an average of two submissions are appraised.	The Transparency Council appraises clinical, economic and at times other criteria during an in camera (recorded) meeting. Patients or patient representatives may speak during meetings (*ad hoc*). Majority voting with possibility of dissent. Meetings take place once per week and an average of 10 submissions are appraised.
Price Negotiation	pan Canadian Pharmaceutial Alliance (pCPA) – price negotiation with the manufacturer on behalf of all Provinces and Territories except Quebec. Since 2017, pCODR and pCPA does not accept submissions with confidential prices.	Economic Commission – price negotiation with manufacturer on behalf of the Ministry of Health and the National Health Fund
Reimbursement Decision	10 + 3 Provincial/ Territorial formularies, Federal formularies + Employer insurance	Ministry of Health (national)

insurance contributions collected by the National Health Fund (NFZ – Narodowy Fundusz Zdrowia), and supplementation of financing from social insurance and the general national and local government budgets [3–7].

In both countries, governments offer reimbursement for selected health technologies and health care services. In both countries, the selection of items for drug reimbursement lists (formularies) is assisted by an HTA process (Table 1). An important difference is that in Poland there exists one national drug formulary, whereas in Canada, drug formularies are narrower in scope, vary by jurisdiction and decisions about them are made at the sub-national level.

1.1. The HTA process in Canada (pCODR and the pCODR Expert Review Committee)

The Canadian HTA process originated with the establishment of an HTA agency in 1989, which is today known as the Canadian Agency for Drugs and Technologies in Health (CADTH) [8]. The Canadian system does not include a general pharmacare program; only select drugs are considered for reimbursement, particularly those administered by hospitals, and those prohibitively expensive. Oncology drugs are considered unique in that they exhibit both characteristics, therefore a separate process exists for oncology – the pan Canadian Oncology Drug Review (pCODR) [9]. Central to pCODR is the pCODR Expert Review Committee (pERC), a 16 member committee composed of clinical experts in oncology subspecialties, economists, ethicists, and patient lay members.

The formulary process refers to the series of events between the application for reimbursement and the creation of the reimbursement list or formulary [9]. The Canadian formulary process is initiated by the manufacturer with an application for reimbursement and the submission of the requisite HTA package. The package must contain a synthesis of clinical trial evidence, an economic analysis, and a budget impact analysis. The economic and budget impact analyses are typically prepared by private consultants contracted by the manufacturer. The package is assessed by external reviewers, the Clinical Guidance Panel, and the Economic Guidance Panel, who prepare assessment reports. In addition, patient organizations and provincial advisory groups have the opportunity to submit written commentary. The assessment reports, patient and provincial submissions are reviewed by the pERC, who is responsible for appraisal. The pERC prepares a recommendation, which can be either positive, negative or conditional (e.g. upon a price reduction). pERC recommendations are posted publicly on the CADTH website and available to decision-makers. They can also be used by the pan Canadian Pharmaceutical Alliance, who engages in price negotiations with manufacturers. Decisions about reimbursement are made at the Provincial or Territorial level by Ministries of Health. [4,9]

1.2. The HTA process in Poland (AOTMiT and the Transparency Council)

The foundations of the Polish HTA process were laid with the creation of an HTA agency in 2005, and its current form was solidified with the Reimbursement Act of 2011 [10]. Central to the process is the AOTMiT [11], a legally independent entity [12] whose objectives are to provide the Ministry of Health with reimbursement recommendations [13], to ensure transparency in reimbursement and pricing, and to rationalize expenditures of the NFZ [14]. Central to the Agency is the Transparency Council (TC), a 20 member committee composed of clinical and/or pharmacology experts, and representatives from public bodies, including the Ministry of Health, the NFZ and the Commissioner for Patients' Rights [11,15].

The initiating step in the Polish formulary process is an application for reimbursement and the submission of the requisite HTA package by the manufacturer. The package must contain a synthesis of clinical trial evidence, and an economic analysis. The economic analysis is prepared by private consultants contracted by the manufacturer. The HTA package is assessed by a team of analysts internal to the Agency, who prepare a Verification Report [6,16]. The report, alongside other information, serves to inform the Transparency Council, who prepares an opinion about the desirability of reimbursement for the product under consideration. The President of AOTMiT prepares a recommendation regarding the reimbursement, which can be either a positive, a negative, or restricted with a condition or a requirement to use in specific circumstances [17]. The recommendation can be used by the Economic Committee of the Ministry of Health in pricing negotiations with the manufacturer. Last is the reimbursement decision made by the Minister of Health, who can, but is not required to, take into consideration all preceding steps [6,13,15].

2. Literature

We identify two major strands of literature that explore HTA processes: (i) studies that focus on the outcomes of assessment and appraisal; and (ii) studies that focus on the perceptions and workings of assessment or appraisal committees. Our contribution is to the second.

First, previous studies have investigated the determinants of appraisal outcomes with the use of revealed preferences techniques [18–22], or stated preference experiments [23–25]. The primary question in these studies relates to the influence of selected appraisal criteria (e.g. clinical benefit, cost-effectiveness) on the appraisal outcome (such as a positive, negative or conditional recommendation). There have also been several studies that compare appraisal outcomes and reimbursement decisions within and between jurisdictions [26–29].

Second, previous studies have also explored the perceptions and experiences of individuals involved in appraisal. For example, several studies investigate the use, and barriers to/ facilitators of the use of economic evidence by appraisal committees [30–32]. Funding of specific drugs [33], and considerations of disease severity [34], or general approaches used by committees in priority setting [35] are also assessed. Lastly, studies describe the stakeholders' evaluations of desirable process characteristics, such as fairness [36], transparency [37], or involvement of a variety of stakeholders [38].

Our study contributes to the literature by discussing the motivations of committee members, and situating the perceived threats to motivations in the context of perceived threats to the broader appraisal process and the value of HTA. We have not found other studies that explore the issue of motivations of HTA committee members.

3. Methods

Thirty (n = 29) qualitative interviews were held, 18 with past and present members of the TC (or previously Consultancy Council) in Poland, and with 11 past and present members of pERC or similar sub-national cancer committees in Canada. Interviews were conducted in person in Poland by WDW between December 2017 and February 2018, and via telephone in Canada by LG between July 2017 and March 2018. Each interview was audio-recorded and transcribed verbatim by a professional transcriber (Canadian interviews in English) and DZ (Polish interviews in Polish). Transcriptions were analysed using a basic content analysis approach [39] with the assistance of the Dedoose Qualitative Software [40].

The study protocol was approved by the Dalhousie University Research Ethics Board. Respondents were invited to participate via an email that included a description of the study, the assurance of confidentiality, and a consent form. The names of committee members are publicly available online, and we identified their contact information through web-searches. In addition to being invited directly by the researchers, many respondents were also approached through their agencies (pCODR invited all present and past members; AOTMiT invited present members). Prior to sending the invitations in Poland, WDW presented the study protocol during a meeting of the TC. The response rate was approximately 40% (we cannot give a precise value, because pCODR's mailing list is confidential).

An initial coding scheme was developed on the basis of deductive codes from the research questions and the literature and agreed upon between the authors. The initial coding scheme was applied by all authors and refined during a first round of coding. Inductive codes that emerged during the first round were discussed and agreed upon. Interviews were re-analyzed with the focus on both *ex-post* emergent themes in addition to the *ex-ante* expected themes in order to articulate interconnections between themes. Codes in the English language were applied to original transcriptions in English (Canada) and Polish (Poland); quotations were translated from Polish into English by the lead author. WDW and DZ are fluent in both languages.

Presented here is the analysis of the inductive emergent themes related to threats perceived by respondents that potentially compromise the value of the HTA process to the health care system. Respondents were not asked explicitly to identify such threats, and these are not the only issues discussed by respondents.

4. Results

To support the arguments in this paper, we illustrate the formulary process as consisting of three broad phases: health technologies assessment, appraisal, and the reimbursement decision. This frames our discussion of threats to the value that HTA brings to the process. We note that the use of HTA in the formulary process is not at the brink of disaster, the process has many strong and positive elements as discussed by our respondents, and those are described elsewhere [41] (Fig. 1).

The assessment phase rests primarily on information, whereas the appraisal phase rests primarily on expert judgement. The reimbursement decision phase is either simultaneous with the appraisal by one group of experts (e.g. United Kingdom) or it is a political judgement that lies with a different group of people (e.g. Canada, Poland). We use the term 'primarily' to account for the conflation of appraisal and assessment during the identification of which technologies to review and which information to include. [42]

For purposes of our discussion, external threats are those that have undue influence on the production of information, whereas internal threats are those that have undue influence on the indi-

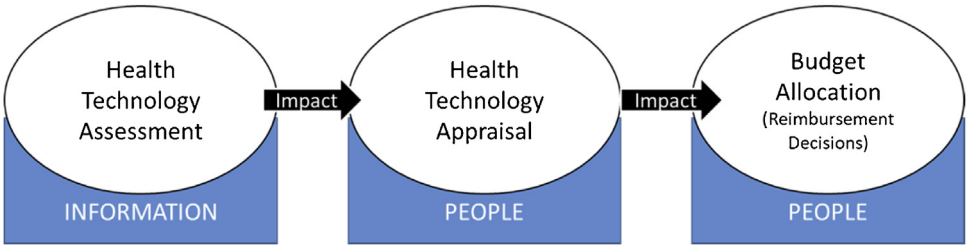

Fig. 1. The formulary process.

Table 2
Typology of Threats to the Value of the HTA Process.

Type of Threat	Description
INTERNAL THREAT	Undue influence on the individuals involved in appraisal and/or reimbursement decisions.
(i) to credibility of actors	Credibility refers to the absence of conflicts of interest, and the ability to remain objective.
(ii) to motivation of actors	Motivation refers to the pecuniary and non-pecuniary rewards reaped from participation in the process.
EXTERNAL THREAT	Undue influence on the production of information.
(iii) to quality of evidence	Quality of evidence depends on the characteristics of studies, such as design, assumptions, data collection, analysis etc.
(iv) to sources of information	Sources of information refer to those who produce evidence as well as their funders.

viduals involved in the appraisal and/or reimbursement decision (Table 2).

Internal threats can further be divided into threats to the (i) credibility of actors; and (ii) motivation of actors. The latter have not been explored in the literature to date. Our results support the argument that it matters to actors that their voice have an impact [43]. We argue that this has been largely de-emphasized in the discussions of including stakeholders' voices as a means to supporting procedural justice or achieving Accountability for Reasonableness within the HTA process [36,44]. Committee members have not typically been discussed as stakeholders in this context.

External threats include threats to the unbiasedness and objectivity of information supplied to the process, including threats to the (iii) quality of evidence, and (iv) sources of information. Our results suggest that these threats grows along with the trend to include more types / variety of information. With the addition of each new information source a new door is opened for the manipulation of evidence.

4.1. Internal threats

4.1.1. Credibility of actors

In general, the importance of ensuring and demonstrating the credibility of committee members is explicitly emphasized in both countries. Great care is taken to ensure that committee members are seen as impartial objective experts. Committee members are experts selected from a pool of specialist physicians, representatives of public institutions, and in Canada also economists and patient representatives. Those selected are thoroughly vetted for potential conflict of interest in the form of financial ties to the pharmaceutical industry. (Quotes 1 in Table 3; refer to Table 3 for all illustrative quotations).

A financial conflict of interest is recognized as a threat and managed in both Canada and Poland. Other types of conflict are not as explicitly managed, for example the conflict faced by a committee member who is a representative of the Ministry of Health (the Minister can submit an application for appraisal of local health care programs), or who is a patient. (Quotes 2)

Also unmanaged is the potential for a political conflict of interest arising due to a non-transparent procedure of selecting committee members, as described by Polish respondents. (Quotes 3) The Canadian process is more clear in this regard, a public call for committee members is made and individuals can be nominated or nominate themselves, and are subsequently selected by a committee.

4.1.2. Motivation of actors

Individuals who participate in the expert advisory committees in Canada and Poland almost exclusively do this in addition to full-time clinical, academic and/or public sector careers [8,11]. Experts are drawn from a relatively small potential pool. Their motivation to participate is vital to the process, and threats to motivation must be identified and addressed. Our results highlight that the two committees experience motivation differently, which is potentially due to differences in the processes.

We frame the discussion of committee members' motivations in the context of motivation theories borrowed from organizational design literature [45]. A distinction is made between two types of motivators: (i) motivators contributing to job satisfaction include challenging meaningful work, recognition, responsibility, involvement in decision making, and the sense of importance to an organization; and (ii) "hygiene factors", or job characteristics the absence of which can lead to dissatisfaction, including status, pay, work conditions, fringe benefits, job security [46].

Financial compensation was mentioned, but not emphasized. It was seen as, on the one hand, creating added incentive to participate, and on the other hand, creating a disincentive to express what may be seen as controversial. (Quotes 4)

The critical role of intrinsic motivators was emphasized. Several respondents in Poland perceived that motivators may be threatened through insufficient recognition and responsibilities, inadequate involvement in decision making, and a decreased sense of importance to the process. Respondents in Canada generally perceived their position in the process to be strong and highly regarded. Only partially could this be attributed to a higher level of financial reward, and relatively lower workload in Canada (Table 1).

First, while the advisory nature of the committee was understood and accepted, some respondents were concerned with the discrepancies of their advice and the subsequent recommendations and reimbursement decisions. Real or perceived, such discrepancies devalue as opposed to offering recognition for committee members' efforts. This concern was evident primarily in Poland, which we attribute to the centrality of the reimbursement decision and the general expectation of Canadians that health care budgets vary by jurisdiction. (Quotes 5)

Second, some committee members in Poland were also concerned with the lack of transparency of subsequent steps, and the absence of feedback information that would allow them to rationalize final decisions. Committee members felt that they were 'kept in the dark', so to speak, which diminished their sense of importance and involvement in decision making. (Quotes 6)

Table 3
Illustrative Quotes from Members of Appraisal Committee**s.**

THEME	QUOTES	Source
INTERNAL THREATS – Credibility of Actors		
QUOTES 1 Conflict of interest managed	Generally committee members have not been in the pharmaceutical business. They may have been researchers and that was their extent of involvement with the pharmaceutical industry. It is rare that a committee member knows the pharmaceutical business from the inside, this would be a serious conflict of interest. Some representatives of public institutions have been in this position. . . .[The TC] must build public trust . . . it must be independent of pressures, and not tied to pharmaceutical producers. Not just the committee members, but their families. We sign conflict of interest declarations before every meeting.	POL 9
QUOTES 2 Conflict of Interest remaining	(. . .) there were even concerns whether someone, who works at the Ministry, should even be there, because this is a conflict of interest, when for example we are appraising a submission made by the Minister (the Minister can submit for the appraisal of health care programs). (. . .)	POL 10
QUOTES 3Selection of committee members	In my opinion the process of selecting committee members in Poland is not specified, and this is a weakness. There is no procedure and most people do not know how selection takes place. This is a secret also for committee members. (. . .) the Minister is not even bound to select members from particular societies. Yes, we know which public institutions are to be represented, but it is not clear how the clinical experts are to be found (. . .) the Minister has a great degree of flexibility here.	POL 9
INTERNAL THREATS – Motivation of Actors		
QUOTES 6 Financial compensation	Committee members are compensated for participating in the meetings (amounts redacted). In the Polish context, this is very good income for one day. So whether they are a professor or a doctor, one or two meetings per month are valuable. Once a person has been appointed to the committee, they are reluctant to risk the position by sticking their neck out. So there is a tendency to try and please the Minister.	POL 17
	In this line of work there is a lack of time, as people are pressed for time in general. All time put into the committee should be compensated, not just attendance of committee meetings. This would ensure that committee members could give up other paid responsibilities and take more time to prepare for meetings.	POL 6
QUOTES 5 Demotivating discrepancies between recommendations and decisions	We as committee members submit an appraisal that is not binding to the President of the Agency, and the President can easily, without providing any rationale, disagree with our appraisal. He does this quite often when giving a recommendation. The Minister, in turn, is not obligated to respect the recommendation of the Agency. (. . .). To be honest, when our opinion is rejected or ignored, this is sad, and we never speak about that publicly that we don't know why it was ignored. Was it due to political reasons, economic, or some other health policy reasons we don't know.	POL 17
	We were quite surprised by the large discrepancy between our recommendations and the Minister's decisions. Less surprising were situations where our recommendation was positive, but the decision negative – because I understand that there may be economic reasons that were decisive. We were the most surprised by situations, maybe 20% of the discrepancies, where we gave a negative recommendation but the Minister's was positive. I can speculate (. . .), but the absence of feedback means that we do not truly know the reasons for these discrepancies.	POL XX
	In another instance, when we say 'no' and the president says 'no' but the minister refunds, this is a controversial situation. Why did this happen, when advisory bodies had justified doubts, and the decision was favourable anyways? Someone described, some two years ago, the positive and negative reimbursement decisions and their relation to the committee's advice. Indeed there were instances, when the president rejected, the committee rejected, and the Minster refunded anyways. This could be the result of a hierarchical decision structure – things do not work like this in all countries, for example NICE has a binding decision authority.	POL 10
QUOTES 6 Non-transparent next steps	It is definitely a challenge that the committee is not privy to knowing the subsequent fate (dalsze losy) of the submissions it reviews. They do not return after some time for discussion with the Minister and the Agency's President – here are the reasons why we decided not to fund something that you recommended, what was the reason for this decision . . . these discussions did not happen and that was a barrier.	POL 3
	A shortcoming is that we receive very little to no feedback. We only know about the discrepancies between our recommendations, the President's recommendations and the Minister's decisions due to some research work by an external non-governmental agency. But this kind of feedback is not provided officially, and I believe that it would be very valuable for us.	POL 9
	I did not have a way to know how the recommendation was received at the Ministerial level, how much our opinions were binding and whether the ministry took them seriously. I did not know to what extent our recommendations weighted into the Ministry's decisions (. . .).	POL 7
	I would prefer, this is my personal opinion, if the committee was composed more of experts and was made co-responsible for decisions, to a specified degree. But the selection is political, not a selection by experts, and not necessarily the right decision.	POL 8
QUOTES 7 Recommendations not leading to equal access for all citizens	[. . .] I think it's hard enough aligning it kind of nationally and kind of getting to some kind of agreement of what we want to do nationally based on a national process. And then taking that back to a province who may have different ideas within that province because of the different culture and treatment algorithms and all of those kinds of things, saying that this now what you need to do, and having that constant dialogue backwards and forwards so they don't feel that there's something being done to them, and getting them involved, is really challenging. Because you want people at a provincial level who are actually prescribing these drugs and treating patients to also feel that they have access to procedural justice. And if they don't because they don't feel that it's accessible, that their voices aren't being heard, then that makes it challenging.	CAN 2
	Again by involving the provincial clinicians or the expert groups more, a lot of those things a lot of the people had already anticipated. Like it's not new to them. they have thought about it. So it would be nice if they have an easy channel to feed that back through to pCODR. Now officially I believe that the clinical guidance panel, they are supposed to seek input from as many people as possible across the country. But in practice, I don't know how easy that is for them to do that.	CAN 1

Table 3 (*Continued*)

THEME	QUOTES	Source
	The big challenge with this at the actual decision making point is, you know, even at the provincial level, there's pushback from some of the politicians because. . . and I understand this. You know, they're responsible for the provincial budget. So they don't necessarily want to tie themselves into decisions made at the pan-Canadian level. And NS and NL are a good example of this. You know there are rich provinces. And both NS and NL's tax base is a little more limited. It's hard to get some of these things done.	CAN 7
	We don't see a written report for feasibility, we just get a summary of it in the clinical and the economic guidance reports. But basically it looks at the impact of what it would be like for the funding agencies if this drugs is funded in Canada. And again, that's really different across the country. Because in the west, it's the Cancer Agency whose budget will be impacted. They will purchase the drug, they will administer the drug, they will monitor the side effects. Ontario and east, it's different again. In Ontario, infusible drugs are covered but oral drugs are not. And most of the new drugs are oral. So then it's a question of insurance and Trillium and all those sorts of things. It's different again in the Maritimes because the number of patients who are going to be getting a specific drug may be less, and there are economies of scale, that it can't be implemented in a smaller center than could be implemented in Toronto and Vancouver.	CAN 11
	So pCODR, it said, you know, when things are uncertain, it would be really beneficial for the provinces to collaborate and come to consensus on this. And you went, it would be really beneficial for the provinces? Like where did you as pCODR think that was going to happen? Because you shouldn't be putting up stuff that is just impossible, right.	CAN 8
	I think the politicians make the decisions they do in part because of what they perceive the public is going to want from them. And so part of our job is to educate politicians. [. . .] So we will make our recommendation [. . .] to the Minister, but we know that other considerations may lead to a different decision.	CAN 6
QUOTES 8 Logistical expectations	Often there is little time to prepare an appraisal. We receive the documents quote late, often it happened a few days before the meeting. The meetings are on Mondays, work should be done of Fridays, and we had to sit down to the appraisal on Saturday and Sunday. This also makes it difficult to consult with experts, since these are non-working days.	POL 9
	We have to prepare the appraisal in a very short time, typically we find out the topic for discussion a week in advance. Given that we want to thoroughly read the clinical part, at least, there is truly not enough time to test models.	POL 7
	In all jobs there is a lack of time, because people generally lack time. This should be addressed, committee members should receive really good compensation for their work. Not just their participation in meetings, but for the work, and this would ensure that committee members could have more time by giving up other additional tasks, and they would be better prepared for the meetings.	POL 6
	In my perspective this is an extracurricular task. If I am expected to discuss 2 to 3 health care programs and 3 drugs per meeting – it is very difficult to verify the evidence, to commit the time that should be committed, and to look into the models. This is the biggest problem – the number of submissions and the amount of work per person.	POL 10
QUOTES 9 Insufficient influence on procedural design	One thing I always questioned was the lottery approach to selecting the sub-committee from the full council. We say that our recommendations are those of the Transparency Council, but we rarely meet as a full council. If 10 members are selected (via lottery), and three do not show up, then we still have a quorum with 7. This has been questioned many times, not just by me, that we include in the lottery individuals who in advance indicated that they are not available.	POL 12
	One issue that keeps coming up, we have been discussing it for two years, and the legal experts think it cannot be changed, is the random lottery based selection of the sub-committee for each meeting. Ten members are selected. If we are not able to participate in a particular meeting, we note that we are not available. But the ten members are selected first, then their availability is confirmed. (. . . We petitioned many times that these people not be included in the lottery, but legally the change is not possible. The consequence is that a meeting can have seven people. I cannot understand this, it runs counter common sense.	POL 7
QUOTES 10 Cynical about role of committee	Let's be honest, the committee the way it is constructed today – it is a fig leaf for the Minister. Because for the Minister ours is only an opinion, and he can respect it or not.	POL 4
	This situation is messy, our role is in fact quite often decorative. We simply provide the Ministry with an "alibi" that it's all right to include this or that drug or procedure in the basket, or to use this drug off-label. Our role ends here.	POL 17
	There are times when we say 'no' and the president says 'no' but the Minister refunds. These are controversial situations, why did this happen, when the expert advisory body had reservations but the decision to fund was made. There even was a report, some two years ago, someone counted the positive and negative decisions and how they related to the Committee's recommendations. In some cases, the president in fact gave a negative recommendation, the Committee as well, and the Minister decided to refund. This is the outcome of a very hierarchical decision structure, regardless of what is happening, the Minister can make a decision. I am sure it does not work like this in all countries, for example NICE has a binding decision authority.	POL 10
EXTERNAL THREATS – Quality of Evidence		
	There is maybe 300 cases at best in Canada every year [of a subset of adenocarcinomas], and not all of those are going to be treated. And yet they won't accept phase 2 data that shows response rates in progression-free survival far in excess of what you would expect from chemotherapy. So sometimes you have to use lower levels of evidence.	CAN 3
QUOTES 11 Decreasing quality threshold for clinical evidence	Ideally it (clinical evidence) would be a randomized phase 3 study. But more and more there seems to be randomized phase 2 data, lower levels of evidence that may provide a more compelling case that the sponsor feels should be relevant and useful despite the fact there not being a randomized phase 3. The kind of clinical evidence is based on hopefully clinical trials, ideally large randomized phase 3 but maybe other levels of evidence depending on what's available."	CAN 2

Table 3 (*Continued*)

THEME	QUOTES	Source
	We actually never had case reports, thankfully, but we do get phase 2 stuff. [. . .] Now some of that is just because the numbers are so small, so you can never do a phase 3 study. But other times, it's the drug companies just trying to get their drug to the market quickly based on very preliminary evidence.	CAN 4
	It used to be called Phase 4 post-marketing trials. But industry didn't like doing that because historically a drug will do its best in phase 2. It never performs as well in phase 3. And it's expected to drop as it comes to market in real world. So industry does not want to support phase 4 because that's going to tell them that the drug isn't even working as well as phase 3	CAN 8
	Clinical studies – they have to be RCTs – randomized clinical trials. This is the gold standard. (. . .) this is very important, we compare to a placebo or another comparator drug. Sadly, for some time now, there is a tendency to focus on non-interiority of the drug. This is a huge problem – what does it mean that a drug is not inferior than its comparator . . .?	POL 15
	(We scrutinize evidence) differently depending on whether it is rare or common, life-threatening, or just decreasing the quality of life, what are the end points of the study, what types of studies, how are they ranked in the HTA guidelines, what is the strength of the evidence . . . we know that in the case of rare diseases, or some other clinical states, it is impossible to obtain strong evidence due to ethical concerns or due to the rarity of the disease. We take this into consideration.	POL 9
	[. . .] and that's why we put the lead for the clinical guidance panel on the telephone when we are discussing the clinical part. Because some of us may be very expert in one cancer. I know a good deal about lung cancer but I'm not the smartest person about management of say an acute leukemia or a lymphoma. So I need to have some kind of that kind of discussion with the experts to help me make my decision.	CAN 5
	The RTC [randomized clinical trial] is the gold standard. If the therapeutic product passed this trial successfully – it cured a group of ill patients – this is very important, we compare to a placebo or a comparator drug. Unfortunately, in the last while (. . .) we apply the principle that the intervention drug should not be worse than the active comparator. This is a big problem (goes on the explain the pitfalls of the non-inferiority principle).	POL 15
QUOTES 12 Reliance on expert opinion	Being able to rely on expert opinion, formally or informally, is a big plus. Formally they are invited to participate in meetings, and informally we can contact our colleagues, or others whom we consider specialists, and consult. Official consultants (experts) also often provide opinions as a part of the agency's assessment report. POL9	POL 9
	" [. . .] and that's why we put the lead for the clinical guidance panel on the telephone when we are discussing the clinical part. Because some of us may be very expert in one cancer. I know a good deal about lung cancer but I'm not the smartes person about management of say an acute leukemia or a lymphoma. So I need to have some kind of that kind of discussion with the experts to help me make my decision."	CAN 5
	At the end, we obtain expert opinions, which are subject to all kinds of shortcomings, this is their nature. We generally rely on the gradation of clinical documents, recommendations from clinical associations are ranked higher than prospective studies, higher than case reports. At the top are large European or global trials, often from the United States.	POL 7
QUOTES 13 Increased desire for real world evidence	After 3 to 5 years of use we can see, if the initial results that the manufacturer produced in the clincial studies were realistic, or overstated. As a physician, and I have worked 40 years as a physician, I remember many drugs that were hailed as wonderful, and how they are in the trash and no one remembers them. I am a proponent of not only evidence from randomized studies, but also data from the patient pool who take specific drugs, and the analysis of their quality and effectiveness after several years of real usage.	POL 3
	Unfortunately we know about randomized studies that they are to a large extent not verified after some time. So they are not the best source of information, but there is great pressure to consider their results, or even lower level results.	POL 6
	I tripped into that because we started trying to do a real world evidence around a drug where pCOER had called out the uncertainty for duration. And we went, well, I guess we could do that. So we're doing it. But meanwhile the whole year worth of patient access that had duration in it, we couldn't get access because they hadn't got the proper patient consent. And we looked at them and said, "Man, that is informing the real world use of your drug, and you didn't get the right patient consent? Man, you guys have got to clean up your act." Because that's a whole year's worth of data that's not accessible. And I think that's where it would be really helpful so that we have real world patient experience instead of just the ones that we can find or, you know. . . I don't know how they even get the patient input right now. So I just think it needs to get some structure better to it.	CAN 8
	I think I find what is more important ones would be some direct patient feedback on the effect of the disease or the effect of the new treatment or existing treatment on their quality of life, on their daily life. Particularly in disease sites, I may be less familiar myself. So obviously you can read that in the clinical guidance but it's a little bit different when you're reading it from the patients' perspectives, you know.	CAN 1
QUOTES 14 Uncertainty of results	Studies of neurological drugs at time choose an outcome scale that is not used anywhere else, and they show improvement – for example that the patient can take 15 instead of 10 steps. This is statistically significant, and it indeed has some benefit to the patient, although it is controversial in light of the adverse events.	POL 13
	There have been situations where the meta-analysis of international studies showed a models effect, and that clinical effects were differentiated between countries. In some countries the drug was shown effective, and in others its effectiveness was questioned. We considered these results to be dubious. Of course, we would consider how large the samples were in these trials, and the reputation of the site that conducted them. Trials on small samples were even less credible.	POL 14
	One thing that I have asked before, for the economic analysis to come out to be a little bit more consistent or a little bit more explicit, is to let us know how good or how poor the model actually is. So we all know there's uncertainty but we just want to know like qualitatively, you know, is it highly uncertain or medium uncertain – that kind of thing. But they don't seem to consistently describe it in the same way. So quite often we don't. . .there's uncertainty but we don't know qualitatively how much there is. So I don't think they actually have adopted that approach.	CAN 1

Table 3 (*Continued*)

THEME	QUOTES	Source
	So I think that's one of the surprises, is just how expensive these drugs are. The second one is how the data is never quite what you want. You know, it's always there's quality of life not there, the comparator in the clinical trial is not the comparator that's used in Canada at this point in time. The outcome measure is new and not one that we really understand. There's always some threat to internal validity or external validity that you can't control for. The data is never good enough. And you know, as a researcher, I understand why that is. But it's frustrating that you're making decisions that affect people's lives based on a lot of probability. You'd like, you know, more definitive data than you get.	CAN 11
EXTERNAL THREATS – Sources of Information		
QUOTES 15 Manipulation of clinical trial data	On the drug front, I know that a pharmaceutical company is going to present data in the best possible light for their particular product. And quite often there are things that they can do, like not giving a head to head comparison' with the one that we are interested in. So I basically would like take drug company data and take it with a pinch of salt, and want to go and reanalyze everything myself	CAN 7
	Sometimes I have the impression that this is stretched in the various reports. I would like straightforward information: There is a patient sick with cancer or diabetes, and I would like to see the effects of the drug versus a placebo. And here we sometimes get case descriptins, sometimes the clinical results are captured from several angles, and sometimes I read this and thing . . . I don't know if they showed effectiveness or not. The patients enter the studies, then they disperse, they re-enter subsequent results, and sometimes it is really hard to tell if the drug was effective – so much depends on how the manufacturer presents things.	POL 11
	Many rare diseases have broken into sub-groups of rare and ultra-rare diseases, because they are classified by their molecular characteristics. Then it sometimes happens that we admit drugs, for which the quality of clinical evidence is low.	POL 13
	It has happened that the clincial trial comparator selected four years ago is different from the current standard of care. The submission does not follow the standard, and there is no opportunity for a direct head-to-head clinical trial. The manufacturer, we, conduct an indirect comparison, which is less reliable, but there is no other option. Often we will not see the direct comparison for a long time, results may appear with great delays. The manufacturer is required to prepare an indirect comparison, which is analysed by the Agency and the committee, and we consider that it has a lower level of credibility.	POL 18
	I think in terms of geography, if a trial has been done in China, do we have reasonable confidence that protocol was followed correctly, it's been university accredited in the right way [. . .] in Europe and North America, we have some regulation and accreditation in place to give use confidence. I'm not sure how far they're extended to other parts of the world."	CAN 7
QUOTES 16 Manipulation of economic data	The biggest challenge for me is the patient population that is never clear. And then the rare diseases, that are not discussed in the reimbursement statute, and then the QALY – the problem with economic data is that we do not have official statistics that would tell us how many patient in Poland have this disease, and how many need this drug. Five consultants will each give a different number, and this is a challenge. It makes a difference, whether we have 200 patients and need to pay 2 million (Polish złote), or we have 600 patients and need to pay 6 million.	POL 11
	Each time we formulate a recommendation I know that the price we see is not the final price. The Economic Committee negotiates the price with the manufacturer after we give our recommendation. If we knew the final price and could see that it is realistic, we could take on more binding discussions. But when we know that the initial price will subsequently change, it is hard to say anything concrete. This burden is passed on to the Economic Committee.	POL 10
	The assessment of the QALY is key in Poland, this is a requirement in the regulations of the committee, and this parameter should not exceed a specified threshold. We look at this closely, but usually the estimations of these parameters are fraught with great uncertainty in both directions. This is why the committee is quite flexible is assessing this parameter. [Author's note: The threshold is for the ICER not the QALY. This mistake is made often and highlights the committee's lack of training in economics.]	POL 13
	(comparing the range of manufacturer to those of economists) gives you some sense of what you think the economic group thought the manufacturer was doing to play games to make the drug look as cost as effective possible.	CAN 11
	I don't like the feeling sometimes that the system should not be run by industry. I mean I get that they're supposed to make a submission. But we've got to make sure that it's added to as we touch it.	CAN 8
	And the variable of market share. if it is a second entry, third entry drug, and they make projections about, you know, it will be 30% of the market in the first year and 50 in the second, you know it's a best guess by someone, usually underestimated so as to not worry the government officials too much.	CAN 5
	Because frankly it colours my attitude towards drugs in more than looking at the ICER. For example, if the company submits what I consider to be a flagrantly bad economic analysis, which I perceive to be just to make their drug look better, then it biases me against all the information about that drug. It's human nature I think. Because the sense is they are trying to cheat.	CAN 5
	I think in terms of geography, if a trial has been done in China, do we have reasonable confidence that protocol was followed correctly, it's been university accredited in the right way [. . .] in Europe and North America, we have some regulation and accreditation in place to give use confidence. I'm not sure how far they're extended to other parts of the world."	CAN 7
	An invitation of patients to attend meetings of the committee usually leads to the patient telling us their story. And this is supposed to be an argument to support the recommendations we make.	POL 5
QUOTES 17 Pharmaceutical influence on patient groups	I am always leery about the Commissioner for Patients' Rights because I can observe that the representatives from that office always try to take the patients' side. But the evidence they use to support their position is so simplistic. Their reasoning is that they are representatives of such and such an office. They should gather patients' opinions more often, maybe not from patient organizations, but from patients directly.	POL 9
	Sometimes we have experts from non-government organizations, but this is rare, because we know that these organizations will always want any drug that is available.	POL 11

Table 3 (*Continued*)

THEME	QUOTES	Source
	But also you need to be very, very mindful that the pharmaceutical industry is incredibly sophisticated in manipulating patient groups. And we government people making funding decisions are very small in number and very inexperienced compared to market access teams that the pharmaceutical industry has. We really are kind of a David and Goliath thing. So I think you really do have to the patient voice but you have to be very careful about how you interpret that in the process.	CAN 7
	¨there is too much drug company influence in the patient reports. You can sort of see that the drug company's been involved quite often in the writing. And that to a certain extent the reports that come through are always the same. You know, patients want to live longer, want to have a better quality of life, they want to have hope, and they want to have access to alternatives.¨	CAN 4
	In addition, it is hard not to suspect that these patient organizations typically have a conflict of interest. I know they look for donors on the pharmaceutical market, and there are manufacturers very interested in helping in these situations. This could lead to the organization and individuals not having an objective view.	POL 7
	We don't even ask anymore, because we know: all patient organizations are steered by the pharmaceutical industry, all without exception. They are subsidized and educated by the industry, so really when fighting for their own cause, their patients, they are fighting for the interests of the industry.	POL 17
	This (considering patient input) is always challenging, because the patients are always represented by someone. These patient organizations, at least in our country, are strongly influenced by manufacturers. We have to be careful when considering patients' opinions that are expressed by a representative, that this representative is not paid by the manufacturer and has no conflict of interest. But it happens often, because who will put in time and effort to represent patients for free. Who else would reimburse their time?	POL 15
	We know that many organizations are backed by the pharmaceutical industry, and we regard them in a particular way. If the manager of an organization tells us: we had three such patients, and we treated them and the drug was effective. One withdrew. But the drug was effective. This will not convince the Committee.	POL 11

Conversely, some respondents in Canada felt that governments generally acted on their recommendation, and that they were able to educate governments at times. Curiously, Canadian governments also do not provide a rationale for their funding decisions, but this was not mentioned by Canadian respondents. (Quotes 7)

Third, committee members observed some weak elements in the logistical design of the appraisal process, for example, the random selection of a review panel, the insufficient time given to review, and unreasonable workload expectations, including an ever increasing scope of health technologies reviewed. (Quotes 8) They also expressed disappointment with the committee not being able to influence the design of the process. (Quotes 9)

Agencies should care about the motivations of individuals. We know from Vroom's Expectancy Theory that motivations can influence individual performance, and in turn the outcomes of the organization. The extent to which individuals are motivated depends on (i) how much value they place on their own performance and organizational outcomes; and (ii) what their perception is of the probability that effort increases performance and performance improves outcomes [47]. Committee members described situations that decrease the perceived probability of influencing outcomes.

While the value that committee members place on their own performance (e.g. in-depth critical understanding of evidence) is intrinsic and not likely affected by process, their perception of the probability that their work influences outcomes is undermined. Some cynically characterized the role of the committee as "an alibi", "decorative", or "a fig leaf" for the politician. (Quotes 10)

We speculate that the perception of insufficient influence on outcome is magnified in Poland by an additional step in the process. While in Canada, the recommendation of the committee becomes the recommendation of pCODR, in Poland, the agency's president renders her/his own recommendation, which can be (and has been) different than the advice of the committee. In that sense, the work of the committee is devalued by its own Agency.

4.2. External threats

External threats (real or perceived) can potentially compromise the integrity of the HTA process, such as objectivity, unbiasedness, and trustworthiness. They arise during the collection of information on two fronts, (i) the quality of evidence and (ii) the sources of information.

External threats are growing in number due to several international trends. First, the push to incorporate information from patients, and/or patients' organizations in the HTA process [48,49]. Second, the trend to incorporate Real World Evidence (RWE) in the broadest sense of the term, given the limitations of clinical trial evidence and the demands for additional evidence by assessors and decision makers [50,51]. For example, in Poland, RWE on effectiveness and safety has been explicitly considered in 45% of reimbursement submissions between 2012 and 2015 [16]. Third, a trend to make processes more transparent and public, thereby creating additional pressure for reduced timelines and decisions/recommendations made in the absence of full information.

4.2.1. Quality of evidence

Several respondents perceived that the quality of evidence used for purposes of appraisal is declining. While all respondents expressed a desire to have high quality clinical evidence, several referred to an increasing push to accept lower than best quality. In addition, many discussed the deliberate use of what would formally be considered a low level of evidence [52,53], typically in order to create a deeper contextual understanding of the disease or therapy under consideration. Examples are observations from the 'real world' or expert opinion. (Quotes 11-13)

In addition, respondents discussed the challenges with a growing uncertainty of results, in part stemming from lower quality of evidence. (Quotes 14)

4.2.2. Sources of information

Additional types of information provided by additional sources create new potential points of entry for undue corporate or political influence, despite their potential to improve procedural fairness.

Respondents expressed concern with the influence of political agents, and/or the pharmaceutical industry in all domains of information. Some respondents indicated that their trust in clinical trial results was negatively influenced, due to, for example, the financing of trials by the industry, or the opportunity for trial results to be presented with overstated benefit. (Quotes 15)

Discussion of economic evidence was more detailed in the case of Canadian respondents, who pinpointed frequent weak points of economic analyses (e.g. time horizon; model choice; source of utility values). Polish respondents discussed economic evidence in a cursory fashion, interpreting it primarily to refer to the budget impact analysis. This is likely due to the differential workload of the two groups (Table 1) and the time spent discussing economic analysis of each submission during meetings. Canadian respondents showed a marked lack of trust in economic analyses of cost-effectiveness and cost-utility, while Polish respondents were equally leery of budget impact estimations. Specifically they were concerned with the lack of certainty about the price of the therapy and the size of the potential patient population. A concern was also raised about the contracting of economic consultants by pharmaceutical companies resulting in non-objective estimates. (Quotes 16)

The reliance on information from patients is formally embedded into the Canadian appraisal process, whereas in Poland this element of the process is *ad hoc* and unstructured. Patients in Canada are invited to provide formal submissions to the appraisal committee using a formal template. Submissions are accepted only from registered patient organizations. In addition, a patient member participates in the appraisal committee's deliberations and votes. Patients in Poland are welcome to attend meetings of the committee, but guidance about their involvement in not as developed. Both committees perceived that patient organizations were vulnerable to undue influence from the pharmaceutical industry, who offered financial support and packaged information for patients in many instances. (Quotes 17)

5. Discussion

We identified threats to the value of HTA in health care budget allocations in two systems that bear similarities in structure, but play out in distinct cultural and regulatory environments. The Canadian political and economic environments have been relatively stable over the past century as compared to their Polish counterparts, giving the Canadian health care system a less turbulent environment. Despite system level differences, threats to the value of HTA described by core stakeholders in the two countries have significant overlaps.

The potential conflict of interest of committee members is recognized and managed through screening and conflict of interest disclosure. This in contrast with findings by Ozierański et al. (2012), who state that cooperation between members of the (at that time) consultative council and the pharmaceutical industry was not unusual [15]. The conflict of interest of patients and patient groups is less emphasized. While in Canada, patient organizations face specific requirements that are meant to address their financial conflict of interest, and patients may be required to sign financial conflict of interest disclosure forms, the question of the 'health' conflict of interest remains. Patients necessarily face the internal conflict of, on the one hand, being a patient who desires to get or feel better at all costs, and on the other hand, being involved in a process that is to divide scarce resources with all of society's interest in mind.

The challenge of being forced to make drug funding decisions in the face of uncertainty has been documented recently [19,54]. Uncertainty arises in part due to the increasingly low quality of evidence, clinical and otherwise, submitted by the pharmaceutical industry to drug appraisal committees. This has been recently documented in the case of submissions made to the Australian Pharmaceutical Benefits Advisory Committee [55], as well as in the case of submissions to the to the NICE single technology appraisal process [56]. Our findings of perceived quality degradation of evidence in Canada and Poland support previous literature.

The threat of undue influence of the pharmaceutical industry on patient organizations has been noted in Poland [15,57], in Canada [58], and elsewhere [59]. In fact, the pharmaceutical industry has been described as using any possible avenues to influence the HTA process [57], therefore our findings in this regard are in line with the literature.

For example, previous studies have noted that medical experts, from whom external advice is often sought, have been a target on which manufacturers had exerted influence [15]. As this potential conflict of interest has been noted, the current practice in Poland is to exclude opinions from experts who have declared a conflict of interest, a practice contested by some of our respondents as overly cautious.

The core contribution of our study is the argument that the motivation of committee members plays an important role in the HTA process and should not be ignored. The threat to the motivation of committee members has not been identified as such in the context of drug appraisal committees to date, even though some of the factors leading to potential demotivation have been described. As such, discrepancies between the opinions of the appraisal committee, the recommendations of the agency and the reimbursement decision have been demonstrated in Poland [13,14,60], while in Canada, the reimbursement decisions have been shown to vary across jurisdictions [61]. Furthermore, previous studies describe a lack of transparency of the process surrounding the appraisal phase in Poland [15]. A quantitative study of determinants of NICE decisions shows that the workload of the committee can have an impact, specifically that a greater number of submissions reviewed during one meeting reduces the probability of a positive recommendation [62].

Committee members can experience frustrations and demoralization, when they perceive a lack of influence over the use of the HTA information that they appraise, or over the process of HTA appraisal in which they participate. Similar situations can have differing effects on the motivation of committee members depending on the institutional context.

Drummond et al. (2008) specify 15 key principles for the conduct of HTA in resource allocation, the last of which is "The link between the HTA findings and decision-making process needs to be transparent and clearly defined" [63]. This transparency is lacking in both countries, where the decision about reimbursement remains political and latent. While in Canada, this reality does not appear to cause frustration, Polish committee members comment on its demotivating nature. While the Canadian federalist context necessitates that regional funding decisions be divorced from a centralized appraisal, the Polish health system context presumes no such division. In addition, the Polish institution has and exercises the option of developing recommendations counter to the committee's opinion, and this does not occur in Canada.

6. Conclusions

Much attention is paid in the design of HTA processes that they be transparent, fair, and that they follow procedural justice principles. In recent years, efforts have focused on the inclusion of all relevant stakeholders in the appraisal of new health technologies for potential reimbursement by public health insurance. This discussion typically emphasizes patients or members of the public as the relevant stakeholders, whose perceptions of procedural justice must be nurtured. The discussions have somewhat overlooked the motivations of the very stakeholders who are at the heart of the appraisal – the experts who sit on appraisal committees. Infringements on their expertise could lead to demotivation, which we identify as a threat to the value of the HTA process in the formulary process. We categorize this as an internal threat. Coupled with

other internal threats to the conflict of interest of stakeholders, and external threats to the quality of evidence and the credibility of information sources, these can pose serious challenges to the integrity of the HTA process.

Relatively simple solutions could include the clarification/ increased transparency of funding decisions that follow appraisal. There may be value in separating the appraisal process into stages, where the rapid evidence assessment focusing on clinical effectiveness would act as a gatekeeping arrangement for a new submission to enter the full HTA process. In other words, submissions would be judged on their clinical merit first, and progress to full HTA appraisal only upon satisfying the clinical criterion. Another potential improvement is a formalized feedback system in which decision makers provide a rationale for making decisions opposite the recommendations of appraisal committees. Lastly, a co-development of procedures within the HTA process with the involvement of the committee members is advisable, as they are in the best position to identify logistical challenges and offer solutions.

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Ethical approval

The study protocol was approved by the Dalhousie University Research Ethics Board File # 2017-4238

Conflict of interest statement

The authors declare that they have no financial conflict of interest. W.D. Wranik is affiliated with the pan Canadian Oncology Drug Review (member of the Economic Guidance Panel at the time of data collection, and member of the Expert Review Committee at the time of publication).

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References

[1] World Health Organization http://www.who.int/medical_devices/assessment/en/ accessed June 21, 2018.
[2] International Network of Agencies for Health Technologies Assessment http://www.inahta.org/ accessed June 21, 2018.
[3] Hutchison B, Levesque JF, Strumpf E, Coyle N. Primary health care in Canada: systems in motion. The Milbank Quarterly 2011;89(2):256–88.
[4] Hoch JS, Sabharwal M. Informing Canada's cancer drug funding decisions with scientific evidence and patient perspectives: the Pan-Canadian Oncology Drug Review. Current Oncology 2013;20(2):121–4.
[5] Wagstaff A. Social health insurance versus tax-financed health systems – evidence from the OECD. In: Policy research working paper 4821. The World Bank; 2009.
[6] Jahnz-Różyk K. Kawalec P. Malinowski K. Czok K. Drug Policy in Poland. Value in Health Regional Issues. 13C:23-26/.
[7] Nieszporska S. Priorities in the Polish health care system. European Journal of Health Economics 2017;18:1–5.
[8] Canadian Agency for Drugs and Technologies in Health. https://cadth.ca/about-cadth accessed July 27, 2018.
[9] Wranik WD, Gambold L, Hanson N, Levy A. The evolution of the cancer formulary review in Canada: Can centralization improve the use of economic evaluation? The International Journal of Health Planning and Management 2017;32(2):e232–60.
[10] Parliament of Poland http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20111220696/T/D20110696L.pdf accessed June 21, 2018.
[11] Agency for Health Technology Assessment – Agencja Oceny Technologii Medycznych i Taryfikacji. http://www.aotm.gov.pl/www/ accessed June 21, 2018.
[12] Kawalec P, Sagan A, Stawowczyk E, Kowalska-Babko I, Mokrzycka A. Implementation of the 2011 Reimbursement Act in Poland: desired and undesired effects of the changes in reimbursement policy. Health Policy 2016;120:356–61.
[13] Kolasa K, Schubert S, Manca A, Hermanowski T. A review of Health Technology Assessment (HTA) recommendations for drug therapies issued between 2007 and 2009 and their impact on policymaking processes in Poland. Health Policy 2011;102:145–51.
[14] Prząda-Machno P, Czech M. The overview of Agency for Health Technology Assessment recommendations in 2012, and their impact on reimbursement decisions. Journal of Health Policy and Outcomes Research 2014;2:12–7.
[15] Ozierański P, McKee M, King L. The politics of health technology assessment in Poland. Health Policy 2012;108:178–93.
[16] Wilk N, Wierzbicka N, Skrzekowska-Baran I, Maćko P, Tomassy J, Kloc K. Study types and reliability of Real World Evidence compared with experimental evidence used in Polish reimbursement decision-making processes. Public Health 2017;145:51–8.
[17] Malinowski KP, Kawalec P, Trąbka W. Impact of patient outcomes and cost aspects on reimbursement recommendations in Poland in 2012-2014. Health Policy 2016;120:1249–55.
[18] Skedgel C, Wranik WD, Hu M. The relative importance of clinical, economic, patient-based values and feasibility criteria in cancer drug reimbursement decisions in Canada: a revealed preferences analysis of recommendations of the pan-Canadian Oncology Drug Review 2011-2017. PharmacoEconomics 2018;36:467–75.
[19] Rocchi A, Miller E, Hopkins R, Goeree R. Common Drug Review recommendations: an evidence base for expectations? Pharmacoeconomics 2012;30(2):229–46.
[20] Pauwels K, Huys I, De Nys K, Casteels M, Simoens S. Predictors for reimbursement of oncology drugs in Belgium between 2002 and 2013. Expert Review of Pharmacoeconomics and Outcomes Research 2015;15(5):859–68.
[21] Charokopou M, Majer IM, De Raad J, Broekhuizen S, Postma M, et al. Which factors enhance positive drug recommendations in Scotland? A retrospective analysis 2006-2013. Value in Health 2015;18:284–91.
[22] Niewada M, Polkowska M, Jakubczyk M, Golicki D. What influences recommendations issued by the Agency for Health Technology Assessment in Poland? A glimpse into decision makers' preferences. Value in Health Regional Issues 2013;2:267–72.
[23] Tappenden P, Brazier J, Ratcliffe J, Chilcott J. A stated preference binary choice experiment to explore NICE decision making. PharmacoEconomics 2007;25(8):685–93.
[24] Linley WG, Hughes DA. Decision-makers' preferences for approving new medicines in Wales: a discrete-choice experiment with assessment of external validity. PharmacoEconomics 2013;31:345–55.
[25] Koopmanschap MA, Stolk EA. Dear policy maker: have you made up your mind? A discrete choice experiment among policy makers and other health professionals. International Journal of Technology Assessment in Health Care 2010;26(2):198–204.
[26] Bae G, Bae EY, Bae S. Same drugs, valued differently? Comparing comparators and methods used in reimbursement recommendations in Australia, Canada, and Korea. Health Policy 2015;119(5):557–87.
[27] Salas-Vega S, Berling A, Mossialos E. A comparative study of drug listing recommendations and the decision-making process in Australia, the Netherlands, Sweden and the UK. Health Policy 2016;129(10):1104–14.
[28] Fisher Heisser, Stargardt. Health benefit assessment of pharmaceuticals: an international comparison of decisions from Germany, England, Scotland, and Australia. Health Policy 2016;10.
[29] Cheema PK, Gavura S, Migus M, Godman B, Yeung L, Trudeau ME. International variability in the reimbursement of cancer drugs by publically funded drug programs. Current Oncology 2012;19:e165–176.
[30] Bryan S, Williams I, McIver S. Seeing the NICE side of cost-effectiveness analysis: a qualitative investigation of the use of CEA in NICE technology appraisals. Health Economics 2007;16(2):179–93.
[31] Chen Li-Chia, Ashcroft Darren M, Elliott Rachel A. Do economic evaluations have a role in decision-making in Medicine Management Committees? A qualitative study. Pharm World Sci 2007;29(6):661–70.
[32] Williams I, Bryan S. Understanding the limited impact of economic evaluation in health care resource allocation: a conceptual framework. Health Policy 2007;80:135–43.
[33] Martin DK, Pater JL, Singer PA. Priority-setting decisions for new cancer drugs: a qualitative study. The Lancet 2001;358(9294):1676–81.
[34] Franken M, Stolk E, Scharringhausen T, de Boer A, Koopmanschap M. A comparative study of the role of disease severity in drug reimbursement decision making in four European countries. Health Policy 2015;119(2):195–202.

[35] Armstrong K, Mitton C, Carleton B, Shoveller J. Drug formulary decision-making in two regional health authorities in British Columbia, Canada. Health Policy 2008;88(2-3):308–16.
[36] Mitton CR, McMahon M, Morgan S, Gibson J. Centralized drug review processes: Are they fair? Social Science and Medicine 2006;63(1):200–11.
[37] Rosenberg-Yunger ZRS, Bayoumi AM. Transparency in Canadian public drug advisory committees. Health Policy 2014;118(2):255–63.
[38] Rosenberg-Yunger ZRS, Thorseinsdottir H, Daar AS, Martin DK. Stakeholder involvement in expensive drug recommendation decisions: an international perspective. Health Policy 2012;105:226–35.
[39] Weber R. Basic content analysis, 2nd edition Sage Publications; 1990. ISNB: 9780803938632.
[40] Dedoose Version 8.0.35, web application for managing, analyzing, and presenting qualitative and mixed method research data (2018). Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com.
[41] Concealed for purposes of blind peer-review.
[42] Jensen MP, Helderman JK, Boer B, Baltussen R. Fair processes for priority setting: Putting theory into practice: Comment on "expanded HTA: Enhancing fairness and legitimacy". International Journal of Health Policy and Management 2017;6(1):43–7.
[43] Ong Q, Riyanto YE, Sheffrin SM. How does voice matter? Evidence from the ultimatum game. Experimental Economics 2012;15(4):604–21.
[44] Dolan P, Edlin R, Tsuchiya A, Wailoo A. It ain't what you do, it's the way that you do it: Characteristics of procedural justice and their importance in social decision-making. Journal of Economic Behaviour and Organization 2007;46:157–70.
[45] Latham GP, Pinder CC. Work motivation theory and research at the dawn of the twenty-first century. Annual Review of Psychology 2005;56:485–516.
[46] Tietjen MA, Myers RM. Motivation and job satisfaction. Management Decision 1998;36(4):226–31, citing (Herzberg, F. Mausner B. Snyderman B. 1959. The Motivation to Work. John Wiley and Sons Inc. Nyew York, NY.).
[47] Heneman HG, Schwab DP. Evaluation of research on expectancy theory predictions of employee performance. Psychological Bulletin 1972;78(1):1–9. Citing Vroom, V. H. (1964). Work and motivation. Oxford, England: Wiley.
[48] Klein AV, Hardy S, Lim R, Marshall DA. Regulatory decision making in Canada – exploring the frontiers in patient involvement. Value in Health 2016;19(6):730–3.
[49] Lopes E, Carter D, Street J. Power relations and contrasting conceptions of evidence in patient-involvement processes used to inform health funding decisions in Australia. Social Science and Medicine 2015;135:84–91.
[50] Garrison LP, Neumann PJ, Erickson P, Marshall D, Mullins CD. Using real-world data for coverage and payment decisions: the ISPOR real-world data task force report. Value in Health 2007;10(5):326–35.
[51] Makady A, van Veelen A, Jonsson P, Moseley O, D'Andon A, de Boer A, Hillege H, Klungel O, Goettsch W. Real-world data in Health Technology Assessment (HTA) practice: a comparative study of five HTA agencies. PharmacoEconomics 2018;36(3):359–68.
[52] Atkins D, Eccles M, Flottorp S, Guyatt GH, Henry D, Hill S, et al. Systems for grading the quality of evidence and the strength of recommendations I: critical appraisal of existing approaches. The GRADE working group. BMC Health Services Research 2004;4(1):38.
[53] Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, et al. GRADE: an emerging consensus on rating the quality of evidence and strength of recommendations. British Medical Journal 2008;336:924–6.
[54] Drieger SM, Cooper E, Annable G, Brouwers M. There is *always* a better way": managing uncertainty in decision making about new cancer drugs in Canada. International Journal of Health Planning and Management 2018;33:e485–99.
[55] Wonder M, Dunlop S. Assessment of the quality of the clinical evidence in submissions to the Australian Pharmaceutical Benefits Advisory Committee: Fit for Purpose? Value in Health 2015;18:467–76.
[56] Kaltenhaler EC, Dickson R, Boland A, Carroll C, Fitzgerald P, Papaioannou D, et al. A qualitative study of manufacturers' submissions to the UK NICE single technology appraisal process. BMJ Open 2012;2, e000562.
[57] Ozierański P, King LP. Governing drug reimbursement policy in Poland: the role of the state, civil society, and the private sector. Theory and Society 2017;46(6):577–610.
[58] Rozmovits L, Mai H, Chambers A, Chan K. What does meaningful look like? A qualitative study of patient engagement at the pan-Canadian Oncology Drug Review: perspectives of reviewers and payers. Journal of Health Services Research and Policy 2018;23(2):72–9.
[59] Lopes E, Street J, Carter D, Merlin T. Involving patients in health technology funding decisions: stakeholder perspectives on processes used in Australia. Health Expectations 2016;19(2):331–44.
[60] Kawalec P, Malinowski KP. Relating Health Technology Assessment recommendations and reimbursement decisions in Poland in years 2012-2014, a retrospective analysis. Health Policy 2016;120:1240–8.
[61] Chafe R, Culyer A, Dobrow M, et al. Access to cancer drugs in Canada: looking beyond coverage decisions. Healthcare Policy/ Politiques de Sante 2011;6:27–36.
[62] Cerri KH, Knapp M, Fernandez JL. Decision making by NICE: examining the influences of evidence, process and context. Health Economics, Policy and Law 2014;9:113–41.
[63] Drummond MF, Schwartz JS, Jonsson B, Luce BR, Neumann PJ, Siebert U, et al. Key principles for the improved conduct of health technologies assessments for resource allocation decisions. International Journal of Technology Assessment in Health Care 2008;24(3):244–58.