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Politics, Science, and Termination: A Case Study of Water Fluoridation Policy in Calgary in 2011

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Abstract

Policy termination is identified as a rare occurrence and thus difficult to study. However, one policy area, community water fluoridation, has seen an apparent increase in termination in recent years. We examine the specific case of termination in Calgary, Alberta in 2011 with a specific goal to apply Kingdon's Multiple Streams Approach to the policy termination framework. Our findings suggest that of key importance for the termination of water fluoridation was the impending need for an upgrade to the fluoridation infrastructure, the effectiveness of the local anti-fluoridation activists, the speed of decision making, and a prominent framing of the issue in ethical terms. The opening of a policy window made possible by the 2010 Calgary municipal election, one that introduced a number of new members to council, as well as the presence of a policy entrepreneur who took advantage of the window's opening, were of specific importance to the success of policy termination.

KEY WORDS: community water fluoridation, policy termination, policy window, policy entrepreneur, municipal government, public policy, public health

政治、科学和政策终结：关于2011年卡尔加里饮用水氟化政策的案例研究

政策终结被确定为一种罕见事件，因此难以进行研究。然而，社区饮用水氟化这一政策领域在近几年里出现政策终结的情况明显增多。为把金顿的多源流框架应用到政策终结框架中，笔者考察了2011年阿尔伯塔省卡尔加里地区（社区饮用水氟化）政策终结这一特定案例。研究结果发现，对饮用水氟化政策终结而言至关重要的几个因素分别为：升级氟化基础设施的迫切需求、地方反氟化行动家的效力、决策速度、以及从道德上对该问题进行突出表达。2010年卡尔加里市政选举所创造的政策窗口开启（该选举迎来了许多议会新成员），以及政策企业家的出现（其对政策窗口的打开加以利用），这二者对政策终结取得成功而言都具有特定的重要作用。

关键词：社区饮用水氟化，政策终结，政策窗口，政策企业家，市政府，公共政策，公共卫生

POLÍTICA, CIENCIA Y TERMINACIÓN: un estudio de caso de la política de fluoración del agua en Calgary en 2011

La terminación de una política se identifica como una ocurrencia rara y, por lo tanto, es difícil de estudiar. Sin embargo, un área de la política, la fluoración del agua de la comunidad, ha visto un aparente aumento en la terminación en los últimos años. Examinamos el caso específico de terminación en Calgary, Alberta en 2011 con un objetivo específico para aplicar el enfoque de corrientes múltiples de Kingdon al

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marco de terminación de políticas. Nuestros hallazgos sugieren que la importancia clave para la finalización de la fluoración del agua era la necesidad inminente de una actualización de la infraestructura de fluoración, la efectividad de los activistas locales contra la fluoración, la velocidad de la toma de decisiones y un marco prominente del problema en términos éticos. La apertura de una ventana de políticas hecha posible por las elecciones municipales de Calgary en 2010, una que introdujo una cantidad de nuevos miembros al consejo, así como la presencia de un empresario político que aprovechó la apertura de la ventana, fueron de importancia específica para el éxito. de la terminación de la póliza.

PALABRAS CLAVE: fluoración del agua de la comunidad, terminación de la política, ventana política, emprendedor político, gobierno municipal, política pública, salud pública

Introduction

Policy termination[1] remains understudied relative to other parts of the policy cycle (Daniels, 2001; Krause, Yi, & Feiock, 2016). This lack of attention is due in part to the perceived relative infrequency of the practice of policy abandonment. Scholars nevertheless continue to work toward the development of a comprehensive theory of termination (Krause et al., 2016). One specific avenue that has been suggested for advancing our understanding has been the application of Kingdon's (1984/2011) multiple streams approach (MSA)—developed for understanding the mechanisms of policy formation—to the termination stage of the policy cycle (Geva-May, 2004; Mintrom & Norman, 2009; Zohlnhöfer, Herwig, & Rüb, 2015).

We study the 2011 decision to cease community water fluoridation in Calgary, Alberta to shed light on policy termination. More specifically, we ask: how helpful is Kingdon's model of policy streams and policy entrepreneurs in advancing our understanding of policy termination? In spite of calls to apply MSA theories to policy termination, its application to this stage of the policy cycle continues to be relatively absent (Zohlnhöfer et al., 2015). The Calgary case is helpful for understanding policy termination given that it is a clear example of a highly visible decision by a government to terminate a policy that had been in place for 20 years, a decision that seemingly runs up against much of the literature outlining barriers to termination (Geva-May, 2004). Moreover, a nearly identical but unsuccessful attempt at termination two years prior to the 2011 decision provides an opportunity to identify the factors that differed between the two attempts.

Our case study contributes to the policy literature in three ways. First and foremost, our case study clearly illustrates the increased explanatory power derived from the addition of Kingdon's model to policy termination. While policy termination models identify a range of factors that increases its likelihood, rarely are they able to explain why specific policies are chosen over others. Our case study suggests that the MSA, and in particular, the concept of the policy entrepreneur, are especially helpful in this regard.

Second, our focus on policy termination at the level of local (municipal) government and outside of the United States is relatively rare (for some exceptions see Doberstein, 2011; Ferry & Bachtler, 2013; Turnhout, 2009). Decision making at the local level is distinctive in a number of ways of importance for policy termination; local decision makers are closest to those who support or oppose the policy, interest group activity is felt more acutely, and thus the consequences of termination are especially clear (Graddy & Ye, 2008).

Third, the public health policy that we consider, community water fluoridation, has seen relatively little in the way of policy analysis generally, even less so in termination

studies. Yet fluoridation may be a uniquely informative example that offers an opportunity to contribute to interdisciplinary scholarship on health policy decision making and the role of evidence and context therein (Fafard, 2008). As a public health measure, fluoridation has a long and contentious history, with strong opinions on both sides and a large, relatively unengaged middle public. The benefits of fluoridation are diffuse and embody what Rose (1992) called the *prevention paradox,* whereby a preventive measure that offers significant benefits to a population offers little to each participating individual. The costs associated with removing water fluoridation, in the form of adverse oral and overall health, would be felt acutely by lower income and other health-disadvantaged populations given existing barriers to dental care. As such, public pressure in support of or opposition to the end of fluoridation is likely to be minimal, eliminating the need for any blame avoidance strategies on the part of politicians (Bauer, Jordan, Green-Pedersen, & Héritier, 2012). Additionally, water fluoridation policy raises the central question of freedom of choice, in that mass medication effectively removes the possibility of opting out of the measure (Nuffield Council on Bioethics, 2007).

Our goal is to assess whether Kingdon's model adds to our understanding of policy termination. As such, the first step is to summarize the key determinants of termination identified in the literature: political factors; economic or fiscal considerations and constraints; and program ineffectiveness. In line with Kirkpatrick, Lester, and Peterson (1999) and Turnhout (2009), we include how the policy type and its context are relevant for termination. We then apply Kingdon's MSA to the case study, especially the concepts of policy entrepreneur and policy windows. We find that the impending need for an upgrade to the fluoridation infrastructure, and the effectiveness of the local anti-fluoridation lobby were important in this instance, given the context of local government and the scientific and technical nature of the policy.[2] We argue that the opening of a policy window made possible by the 2010 Calgary municipal election, as well as the presence of a policy entrepreneur who took advantage of the window's opening, were of key importance for understanding the decision to terminate water fluoridation.

Drivers of Policy Termination

In the first and now considered classic conceptualization of policy termination (e.g., Ferry & Bachtler, 2013), de Leon defined it as "the deliberate conclusion or cessation of specific government functions, programs, policies, or organizations" (1978, p. 370), some of them being more resistant to change than others. In spite of de Leon's early attention, policy termination is lamented as a neglected aspect of policy research (Bardach, 1976; Ferry & Bachtler, 2013).

Many scholars have argued that significant obstacles make policy termination difficult and have accordingly focused on identifying these (Kirkpatrick et al., 1999). One obstacle is inertia (Geva-May, 2004, p. 311) or dynamic conservatism (Kirkpatrick et al., 1999). A second potential obstacle is time: the longer a policy has been in place, the more difficult it is to terminate given a policy legacy or path dependencies (Mulvale, Abelson, & Goering, 2007). Third, direct resistance to termination, such as effective opposition by beneficiaries, stakeholders, and implementers, can be a powerful obstacle (Bardach, 1976). Finally, there may be significant financial, political, and/or emotional costs associated with termination (Geva-May, 2004). In essence,

much of the discussion in the policy termination literature focusses on the barriers that allow termination to be avoided.

Since the mid-1970s when work on policy termination first appeared in the literature, important studies have distilled its key drivers (see Table 1). Three of the most often cited are political factors, financial imperatives, and policy inefficiencies.

First, political factors, including shifts in government or in political ideology, are important (Bardach, 1976; de Leon, 1983; Doberstein, 2011; Kirkpatrick et al., 1999; Krause et al., 2016). This set of factors has been operationalized in multiple ways. Bardach (1976) focussed on a change in the government administration or in the dominant ideological frame. Graddy and Ye (2008) look specifically to increased public support for reducing the size of government as key to policy termination. In a more comprehensive analysis of the political environment, Kirkpatrick et al. (1999) include the prevailing political ideology, the size and strength of coalitions for and against termination, the presence and viability of compromise, and speed: if termination can happen quickly, it may be more likely to occur. Others have also underscored the importance of effective organized interests opposing termination to its likelihood (Doberstein, 2011; Graddy & Ye, 2008). Lamothe and Lamothe (2015) noted the role of policy diffusion; that is, the degree to which termination decisions made by neighboring governments matter for the likelihood of policy termination.

A second key factor is financial considerations. Periods of fiscal instability play an important role in providing an imperative that makes policy termination—particularly for costly programs—much more likely (Kirkpatrick et al., 1999). Fiscal retrenchment, budget deficits, and the adoption of austerity measures also increase the likelihood of termination (Ferry & Bachtler, 2013; Graddy & Ye, 2008).

Tied to financial imperatives is the degree of inefficiency embodied in the policy, and the efficacy of the policy, evaluated through formal policy evaluation strategies (Geva-May, 2004; Krause et al., 2016). Although evaluating policy efficacy and efficiency is fraught with difficulties, these factors are important. Limited efficacy (actual or perceived) was key, for example, in the termination of ecological corridors policy in the Netherlands (Turnhout, 2009) and of climate protection initiatives in the United States (Krause et al., 2016).

The problem with these factors, however, is that while they provide the right conditions for the termination of policy, rarely are they sufficient for understanding why particular policies are chosen for termination over others. Financial imperatives, for example, create conditions that make it easier for governments to end some but not all policies. Identifying why particular policies are chosen over others requires in part digging into the specifics of the policy itself. Turnhout (2009) underscored the highly contextual nature of policy termination and thus the importance of examining policy termination on a case-by-case basis.

Reflecting on the literature established during the period of retrenchment in the 1990s, and in line with Turnhout (2009), Kirkpatrick et al. (1999) added two sets of policy termination drivers to those already identified. The first is the inherent characteristics of the policy, including its *raison d'être*, its longevity, its invisibility, and its complexity. A policy that is seen as addressing an important problem, has a long history, is largely "invisible" to the public, is complex, and offers visible and tangible benefits to the public may be more resistant to termination. Other "internal"

Table 1. Modeling Policy Termination

	Bardach (1976)	de Leon (1983)	Kirkpatrick et al. (1999)	Geva-May (2004)	Graddy and Ye (2008)	Turnhout (2009)	Doberstein (2011)	Ferry and Bachtler (2013)	Lamothe and Lamothe (2015)	Krause et al. (2016)
Political										
Change in government/ideological context	X	X	X	X			X	X		X
Effective opposition			X		X		X	X		
Financial										
Financial imperatives		X		X	X	X		X		
Inefficiencies										
Government & policy inefficiencies/efficiencies		X		X		X				X
Policy characteristics & context										
Policy characteristics			X				X		X	
Speed			X							
Period of turbulence/policy window	X			X						
Policy entrepreneur				X						

Source: Authors' compilation.

factors relevant for termination include the age of the policy (Doberstein, 2011; Ferry & Bachtler, 2013), the adoption of mandatory renewals or sunset provisions at their outset (Doberstein, 2011; Geva-May, 2004), and the degree of institutional protection, including the constitutional versus legislative basis of the policy (Ferry & Bachtler, 2013). The second policy termination driver identified by Kirkpatrick et al. (1999), of particular interest for our purposes, is that governments are more likely to defer to experts for termination decisions on policy that involves scientific or technical complexity.

Kingdon's Multiple Streams Approach

Taking a somewhat different approach, Geva-May (2004) argued that applying the constructs developed by John Kingdon (1984/2011) in his agenda-setting model of policy development to termination research could facilitate our understanding of what makes termination possible. A key idea in Kingdon's model is the *policy window*, which is the critical juncture when three streams converge: the problem stream (i.e., which issues or problems policy makers decide to pay attention to), the policy stream (i.e., viable solutions to the problem), and the politics stream (various circumstances including public mood, sociopolitical and economic circumstances, and a change in government). Policy windows provide for the possibility of policy change, including (but not limited to) termination.

Another of Kingdon's key concepts is the *policy entrepreneur*, which is an individual, inside or outside of government, who invests resources (time, energy, reputation, money) into furthering a policy that they support. A policy entrepreneur can try to create a policy window (induced window), or they can be ready to "ride the wave" when it occurs.[3] According to Geva-May (2004, p. 315), policy entrepreneurs can play an important role in termination in that they "can introduce new dimensions of conflict and destabilize a stable situation; then equilibrium-seeking forces allow for new issues (in our case, termination proposals) to enter the policy arena." They play an important agenda setting role in part by framing and defining the problem to be addressed and by prompting critical feedback in support of the frame. This process may involve highlighting the costs and/or the perception of harm associated with non-action and the benefits and/or reduced risk associated with a preferred course of action. Policy entrepreneurs are skilled at coordinating the involvement of participants, at developing coalitions among key players, and at attracting new and dedicated constituents in support of the policy. In short, policy entrepreneurs are key strategic actors who take advantage of the window openings that provide an opportunity for countering the organizational stability and equilibrium forces that prevent policy termination. They are active agents in the policy process.

In summary, the policy termination literature identifies a range of factors that influence the likelihood of policy termination. As noted above, however, a number of these factors simply provide the circumstances under which termination is possible, without identifying why some policies are chosen over others. Using the case of the termination of water fluoridation in Calgary in 2011, we identify how the application of Kingdon's model to the investigation adds to our understanding of the context in which specific policies are successfully terminated.

The General Context: Community Water Fluoridation

Decision-making authority on fluoridation in Canada rests with municipal governments, with additional guidelines and legislation at the federal level and in some provinces (Carstairs & Elder, 2008). First implemented in 1945 in the United States and Canada, the percent of the Canadian population exposed to fluoridation was 6 percent by 1960 but increased dramatically thereafter (Rabb-Waytowich, 2009). Accurate and comprehensive identification of fluoridation coverage and incidences of cessation are deceptively complex in part because of linked water structures between communities. In some instances, communities engage in active dismantling (Bauer et al., 2012) while in others cessation occurs due to dismantling by the community with which water supplies are linked (Fundytus, Thawer, & McLaren, 2017). Estimates produced by the Public Health Agency of Canada suggest that fluoridated water systems coverage in Canada had reached 42.6% of the population by 2007 (Public Health Agency of Canada, 2017). By 2012, however, that figure had dropped to 37.4% and had remained relatively unchanged by 2017 at 38.7% (Public Health Agency of Canada, 2017). Coverage varies widely across Canada, with 2017 estimates suggesting that 69% of the population in Manitoba had fluoride coverage while only 1.2 and 0% coverage existed in British Columbia and the Yukon, respectively.

Much of the recent decline in coverage in Canada has been due to cessation in Alberta, where coverage dropped from 74.6% in 2007 to 42.6% between 2007 and 2017. The large decline in Alberta stems primarily from Calgary's decision to end coverage in 2011 given the size of its population (see below). Several smaller Alberta municipalities, including Drayton Valley (2008), Athabasca (2010), Slave Lake (2011), Taber (2011), and Okotoks (2012), also decided to remove fluoride from water supplies during the period in question. Extant research (McLaren & Singhal, 2015) hints at the possibility of policy diffusion (Berry & Berry, 2014) in this instance, with Calgary serving as a model for smaller Alberta municipalities, a finding also noted in media coverage (Swiderski, 2016).

The evidence base on fluoridation is voluminous. In brief, several systematic reviews have concluded that fluoridation is effective in preventing tooth decay at the population level, especially among children (Iheozor-Ejiofor et al., 2015; McDonagh et al., 2000). Important limitations to these findings have nevertheless been identified. For example, the well-known "York Review" identified lack of appropriate analysis as a serious problem (McDonagh et al., 2000) and the recent Cochrane review (Iheozor-Ejiofor et al., 2015) noted that over 70% of studies were published prior to 1975, raising questions about their relevance in contemporary circumstances. Additionally, it is well documented that fluoridation is associated with dental fluorosis, a mottling of teeth caused by systemic exposure to fluoride during tooth eruption (e.g., age 0-4) (Iheozor-Ejiofor et al., 2015; McDonagh et al., 2000).

These limitations have played a role in allowing evidence uncertainty to frame deliberations on fluoridation policy. Fluoridation has always been contentious: well-defined opposition and public skepticism to its use has existed since its inception (Carstairs & Elder, 2008). The main points of opposition include skepticism about its effectiveness for preventing tooth decay; concerns about its safety; and resistance on ethical grounds, related to its intrusiveness and the difficulty of opting out (McLaren

& McIntyre, 2011). Regarding the difficulty of opting out, Carstairs (2010) has noted that opposition to fluoridation in Canada has centered on a belief that "… fluoridation was an unacceptable violation of civil liberties" (p. 147).

Approach

To study the case of fluoridation termination in Calgary, we focused on two data sources: city council documents and semi-structured interviews. For the former, we reviewed meeting minutes of city council and relevant standing policy committees (e.g., Utilities and Environment), which are publicly accessible through the City of Calgary website (www.calgary.ca). We searched for relevant documents using "fluoridation" as a search term, and ultimately drew from 11 documents (see City of Calgary, 2002, 2009, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f, 2011g, 2012, n.d.).

We also conducted semi-structured interviews with 14 individuals who, based on a review of city council documents and local media coverage of the issue, participated in the 2011 fluoridation deliberations in some manner. Of our initial list of 72 individuals, we contacted 35 (to represent a breadth of roles), and of these, 14 agreed to participate. The interviewees were members of city council and the health services authority, health professionals outside of the health services authority, faculty members from the University of Calgary, local media, and members of the public engaged in the debate. Eight of the 14 interviewees supported fluoridation while 6 opposed the measure.

Ten of the interviews were conducted face-to-face and three by phone between January and April 2016. One individual requested the interview questions and provided written responses instead of participating in a face-to-face interview. The interview guide asked interviewees how they believed the issue arrived on the agenda, their role in the 2011 debate, their sense of the complexity of the issue, and their understanding of the factors that led to decision to end fluoridation. Written informed consent was obtained from all interviewees.[4] The interviews were recorded and transcribed for analysis.

The Context: Community Water Fluoridation in Calgary

In 2011, Calgary was the fifth largest metropolitan area in Canada, with a population of 1,096,833 (City of Calgary, 2012). The city's economy was and continues to be dominated by the oil and gas industry, and as a result the city has a comparatively high median total family income: in 2011, it was $93,410, significantly above the national median income level of $72,240 (Statistics Canada, 2017). Higher socioeconomic circumstances have been argued to lower fears of the risks associated with fluoride (Carstairs, 2010). The city is also decidedly conservative in its political leanings and is arguably the most conservative major city in the country, with strong strains of populism and libertarianism among its residents, a factor that has been noted for its potential to introduce opposition to fluoridation on the basis of individual freedoms (Carstairs, 2010).

Within Canada's federal structure, although local governments are the creations of provincial governments through ordinary legislation, cities have complete jurisdiction over water fluoridation policy. Calgary city council consists of a mayor and 14 ward aldermen,[5] with elections taking place every three years.[6] Political parties are notably absent from Calgary politics, and each member of city council has an equal vote in the decision-making process with the mayor voting last, so as to not unduly influence the council's decision. Decisions within city council are made on a simple majority-plus-one basis.

Fluoridation in Calgary has had a contentious history. The practice began in 1991 following a 1989 plebiscite. Prior to that date, four unsuccessful plebiscites had been held on the issue (Carstairs, 2010). The 1989 plebiscite—prompted by pressure from students who had studied the issue in a local high school course—passed by a narrow margin (53%). As a result, fluoridation at 1.0 ppm began in Calgary in 1991.

In 1997, members of Calgary city council were approached by citizens who were concerned about the safety of fluoridation given new evidence related to the practice (Pryce & Smorang, 1999). The city responded by sponsoring, along with the Calgary Regional Health Authority (CRHA), an expert panel to review this new research. The panel recommended continuing fluoridation but at a lower concentration of 0.7 ppm (City of Calgary, n.d.). City council subsequently decided to hold a plebiscite on the issue in conjunction with the 1998 municipal election. During the three-month campaign, the CRHA was active in building partnerships with various organizations and initiating education efforts designed to rally support for the continuation of fluoridation. Although organized anti-fluoridation activity was present, 55% of voters supported the continuation of fluoridation (Pryce & Smorang, 1999).

Between 1998 and 2011, the issue of fluoridation was raised occasionally at city council (e.g., City of Calgary, 2002). Most substantively and importantly for our purposes, in April 2009 a notice of motion was introduced to cease fluoridation in the city's water. The motion was supported by 5 of 14 aldermen but was narrowly defeated when it came before council by a vote of 6 to 7 (City of Calgary, 2009).[7] A motion to refer the question of water fluoridation for further study at the time was supported by only four members of council.

January 2011 may be viewed as the formal "beginning of the end" of fluoridation in Calgary, and we consider the ensuing events in more detail below. Briefly, a notice of motion supported by 10 aldermen—almost identical in wording to the motion introduced in 2009[8]—was brought forth on January 10th to repeal the existing fluoridation bylaw (City of Calgary, 2011a). Council opted to refer the motion to an upcoming meeting of the Standing Policy Committee on Utilities and Environment to be held on January 26th to provide an opportunity for public input on the issue (City of Calgary, 2011a). Following this meeting, the motion was forwarded to the Regular Meeting of Council held on February 7th. At that meeting, a motion to refer the decision to a plebiscite was raised but rejected, as was the question of whether to refer the question to a panel of experts for additional study (City of Calgary, 2011d). The motion, along with an amendment to redirect monies saved from the discontinuation of fluoridation to targeted fluoride treatment for children in low-income families (City of Calgary, 2011a; McLaren & Petit, 2018), was twice supported at the March Regular Meeting of Council (City of Calgary, 2011e). The third reading of the

motion took place during the May 2011 Meeting of Council, following a 30-day public notice period as required by Alberta's Ministry of the Environment (City of Calgary, 2011f). The motion passed, with a final vote of 10 to 3 on third reading, and fluoridation ended in May 2011.

The Termination Decision

Our goal is to identify the degree to which the introduction of Kingdon's MSA adds to our understanding of the factors that facilitate policy termination. Toward that goal, we first evaluate the applicability of the three dominant sets of explanatory factors in the literature: political factors, financial considerations, and policy efficiencies. We then evaluate the usefulness of applying Kingdon's model to the case study.

Political Factors

In line with Kirkpatrick et al. (1999), Geva-May (2004), and others, political factors played a significant role in assisting in the decision to terminate fluoridation in Calgary in 2011. Perhaps most importantly, the October 2010 municipal election resulted in a regime change at City Council, with a new mayor and five new aldermen among the 14. As noted by one alderman in an interview, the new council constituted "a real change in terms of the governance environment (with) a bunch of new councillors and returning councillors … working together in an unprecedented way" (C2).[9] In contrast to the previous council, the new regime was described as being more open to consensus-based governance. The come-from behind election of Naheed Nenshi, the first Muslim mayor of a major Canadian city, arguably Canada's most conservative city, is emblematic of the profound shift that resulted from the 2010 election.

The shift in council created between 2009 and 2011 provided the conditions that allowed for the previously rejected motion to be addressed anew by a largely new council and a mayor who was open to a new consensual decision-making style. At the same time, the new council was described as more libertarian in orientation: "We had a council that swung more toward, on the political spectrum, libertarian. And they're more inclined to not have government do those kinds of things [fluoridation]" (C4). The regime change was thus accompanied by a shift in political orientation among the council, one much more favorable to the idea of reducing government's role in citizens' private lives. As noted earlier, the decision to fluoridate water has always been a contentious one, and one of the main points of contention has been the intrusiveness of the practice, one for which individual level opting out is not an easy option. The shift in political orientation among council as a result of the 2010 election was thus one that coincided directly with a key point of opposition to water fluoridation.

An analysis of voting records (see Table 2) shows that the change in membership on council between 2009 and 2011 was integral to the passage of the motion in 2011; although two returning aldermen from 2009 switched their votes to support it in 2011, three of the new members of council (and a fourth who was absent) supported the motion allowing for it to achieve the support of a majority of council members. Opposition to the motion to cease fluoridation centered around some of the more

Table 2. Comparison of 2009 and 2011 Council Votes on Motion to End Water Fluoridation, Calgary City Council

Councillors	2009	2011
Farrell	For (Sponsor)	For (Sponsor)
Chabot	For	For
McIver	For	–
Stevenson	For	For
Pincott	For	For
Mar	For	For
Hodges	Against	For
Ceci	Against	–
Colley-Urquhart	Against	For
Fox Mellway	Against	–
Hawksworth	Against	–
Lowe	Against	Against
Connelly	Against	–
Carra	–	For
Demong	–	For
Jones	–	For
Keating*	–	Absent from meeting
MacLeod	–	Against
Pootmans	–	Against
Nenshi (Mayor)	–	Against

* Councilor Keating was a signatory to the 2011 motion but he was not present for the May vote on third reading.
Source: Author's compilation from City of Calgary Minutes.

progressive members of council (Aldermen Lowe, MacLeod, and Pootmans, and Mayer Nenshi) but key supporters were also progressive in their general political orientation (Aldermen Farrell, Pincott, and Carra). Support for the motion, then, is not easily identified with a particular ideological orientation.

The regime change was accompanied by the presence of local constituents who effectively expressed opposition to fluoridation. Consistent with the work of several scholars (Doberstein, 2011; Ferry & Bachtler, 2013; Graddy & Ye, 2008; Kirkpatrick et al., 1999), an effective opposition to the policy was key to the increased support for fluoridation termination among council in Calgary in 2011. Several interviewees underscored the importance of lobbying efforts by proponents of termination for the eventual support of the motion in 2011. Composed of a few key individuals in a "fairly loose coalition" (H1), they were well known to participants in the deliberations because of their persistent efforts over time. These efforts included holding regular meetings with city council members. As described by one anti-fluoridation advocate, "[We] were the main leaders to the city council. We pursued getting it back on the agenda from 1999 until it actually got back on the agenda around 2010" (H1). The efforts of the anti-fluoride advocates paid off when one alderman, Druh Farrell, agreed to introduce and spearhead motions to end fluoridation, first in 2009 and again in 2011.

Though the arguments made by anti-fluoridation advocates were diverse, arguably the most effective were around the ethics of fluoridation, which appeared to gain particular support among city aldermen. One alderman suggested: "It wasn't so much about the merits of fluoridation. It was about the principle of whether or not we should be in the business of providing medication … to 1.2 million people. And a lot of people voted for that reason" (C3).

Also of political importance was the degree to which the public—at least those who were pro-active in contacting their alderman—appeared to support termination. At the January meeting of the Standing Policy Committee on Utilities and Environment, for example, an alderman commented, "My job, as I understand it, is to follow … the direction from my constituents. Thus far … it is about 400 to 1 to say get this out of our water" (City of Calgary, 2011b).

The lack of an effective pro-fluoridation lobby in 2011, on the other hand, was in direct contrast to events in previous iterations of fluoridation decision-making in Calgary, such as 1998. Several interviewees noticed, and expressed disappointment about, its relative absence. A member of the local media community agreed: "The professionals from organizations need to step up in a big way. They didn't come out in any organized way. […] They didn't really make enough of an effort to educate the public about what fluoridation was and why it was important" (M1). The limited presence of fluoridation supporters in 2011 can be contrasted to their more organized and effective campaign launched in 1998 at the time of the plebiscite, when the Calgary Regional Health Authority, Alberta Blue Cross, the Alberta Dental Association, the Alberta Dental Hygienists' Association and other groups, along with individual dentists, demonstrated shared ownership of the issue and worked together on the campaign. Strategies at that time included identifying and developing partnerships with various stakeholders and educating health professionals and the public on the safety, effectiveness, and efficiency of water fluoridation (Pryce & Smorang, 1999). The contrast was noted by one interviewee, a local health professional who said "If you look at the first plebiscite, the fact that we had all those studies out, and we took the time to talk to anyone who called in, I think was helpful" (H2).

It would be a mistake, however, to suggest that fluoridation supporters made no individual efforts to participate in the policy debate. In addition to participating in the public forum held on 26 January, one individual from the health services authority said "I offered to meet with [council members] individually [but] only two of them that [sic] voted against it even liked to talk to me. They weren't open to a different point of view" (H4). What was nevertheless also clear was that a number of supporters of fluoridation had little motivation to participate. A local health professional noted "I talked to many dentists who said they were almost fed up of this fight over and over again and saw it as a foregone conclusion on city council" (H2).

Overall, it appears that the readiness, willingness, and capacity to engage in the 2011 deliberations were simply much higher among those opposed to fluoridation than those in favor of its use. Given the regime change and the concomitant shift in political orientation, the absence of an effective pro-fluoridation lobby in 2011 only reinforced the effectiveness of the anti-fluoridation lobby.

Financial Imperatives

A second key set of factors identified in the literature for understanding termination decisions are linked to budgetary concerns (Ferry & Bachtler, 2013; Geva-May, 2004; Kirkpatrick et al., 1999). Several of our interviewees identified cost concerns as of primary importance for the water fluoridation termination decision. The costs associated with fluoridation were not excessive, amounting to approximately $750,000 per

year, but specific upgrades to water treatment plants employed to fluoridate water were necessary, at a cost of approximately $6,000,000 (City of Calgary, 2011a). At the time of the 2009 motion to terminate fluoridation, the costs were estimated to be between $2 and $5 million (City of Calgary, 2009). These costs had been anticipated and budgeted for, but their timing was nevertheless identified in interviews as having opened a window for re-evaluating the fluoridation policy. One alderman labeled these infrastructure costs a "trigger" (C4).

Importantly, however, these financial considerations were also present in the 2009 discussion at council and were clearly acknowledged in that year's motion to repeal the by-law that introduced water fluoridation. Two years later, however, the costs had risen by a significant amount and the financial impact of the 2008 economic recession (City of Calgary, 2011g) would have made the cost savings especially difficult to ignore. Therefore, while financial considerations appeared to have played a role in the decision to adopt the motion in 2011, their presence alone would seem insufficient for explaining the decision to terminate.

Program Inefficiencies/Ineffectiveness

Ineffective and/or inefficient policies have been shown to be more vulnerable to termination (de Leon, 1983; Geva-May, 2004; Turnhout, 2009). Determining effectiveness and efficiency, however, is rarely straightforward and data can be difficult to collect. As such, *perceived* rather than actual effectiveness and efficiency is often at play.

We identify two ways in which evidence on the effectiveness of fluoridation played out in the Calgary deliberations: (1) disputes about evidence, which created and magnified uncertainties and frustrated decision makers; and (2) the intersection of evidence with power and authority. Both have been considered elsewhere (e.g., Armfield, 2007; Martin, 1991).

First, both supporters and opponents of fluoridation presented significant scientific evidence and yet drew very different conclusions, about which they seemed to be equally certain. Supporters of fluoridation referenced systematic reviews and scientific evidence; for example, a health professional at the January SPC-UE meeting stated "There are numbers of not just studies but systematic reviews, where all the research is put together using formal methods to look at what the overall bottom line conclusion is. The bottom line conclusion is, even today, water fluoridation is a good thing, not a bad thing" (City of Calgary, 2011b).

Notably, however, opponents of fluoridation argued against the effectiveness and safety of fluoridation with a similar look to scientific evidence. One anti-fluoridation advocate that we spoke with stated definitively: "It's not effective, and that's proven time and time again" (H1). The individual went on to say, "It's not safe; it's absolutely not safe. We have over 1,000 studies now showing [it affects the] pineal gland in the brain" (H1).

The city councillors that we spoke with suggested that the arguments made by opponents of fluoridation were successful in undermining the scientific evidence put forward by its supporters. One alderman confidently stated to us that "the science was extremely inconclusive" and added: "I saw the fluoride issue as … nowhere near

being as cut and dry and … there wasn't a real sort of acknowledgement of that and a thoughtful approach to it" (C2). And although this same alderman admitted the lack of credibility of some of the opponents involved in the campaign, he nevertheless added: "there was a much more thoughtful group of proponents [of cessation], who were probably the most vocal, who were making the scientific-based arguments. I mean there was a [doctor] in town who had written a book, *The Case Against Fluoride*. He'd spent a lot of time doing the rounds" (C2). The book in question was one co-authored by Dr. James S. Beck, MD and professor emeritus of medical biophysics from the University of Calgary, and an active participant in Calgary's effective anti-fluoridation lobby. The book, published in 2010, arguing against the practice of water fluoridation due to associated safety and ethical concerns, was distributed free of charge to city councillors and, as evidenced in our interviews, played a role in successfully challenging established medical and public health research and opinion on the issue.

A second way in which evidence on the effectiveness of fluoridation played out in our case study has to do with the intersection of evidence with power and authority. Scholarship on knowledge and power in science, including fluoridation (Martin, 1991), has identified that policy decisions have historically benefited from the authority of the individuals and institutions endorsing it, including mainstream health professionals as well as large government and professional associations and societies. In line with this, Kirkpatrick et al. (1999) noted that policy decision makers are likely to follow the recommendations of experts where scientific or technical issues are involved.

Although suspicion of science and medicine has always surrounded the issue of fluoridation (Carstairs & Elder, 2008), there is evidence—manifest in our Calgary case—that this power imbalance has shifted in recent years. Whereas the 1950s has been characterized as a period of trust and optimism in science and experts (Carstairs & Elder, 2008), this has given way to a context of increased public concern about some science and technology issues and the active contribution of non-experts to science discourse (Bucchi, 2008). These dynamics are nested within the neoliberal shift begun in the 1980s, one unfriendly to large-scale (universal) public health and social policy initiatives (Carey & McLoughlin, 2016; McLaren & Petit, 2018). Our findings identified instances in 2011 where the credibility and authority of health and medical professionals were questioned. As noted by one alderman "I would say that the public health response was 'because we said so' … What I saw in public health officials, and what I experienced in lobbying from public health officials was this sort of obtuse arbitrary sort of position that really undermined any sense of public confidence or confidence in the individual who I was talking to" (C2).

This dynamic played itself out in additional ways. In January 2011, the Dean of the Faculty of Medicine at the University of Calgary offered to convene a group of experts to critically review the most up-to-date scientific literature and to provide evidence-based answers to questions about the risks and benefits of fluoridation to council. Further, he promised the proposed report could be delivered quickly, within two months' time, so as not to hold up the deliberations indefinitely (City of Calgary, 2011c). When it went to vote, however, the offer was rejected by a 5 to 8 margin.

Illustrative of the tensions around knowledge and expertise at the heart of the debate, many in the health professional community were unsurprisingly angry: "They

rejected [the offer], which I thought was disgraceful. Absolutely disgraceful. My mind's made up, don't confuse me with facts, that's what I heard from them" (H3). The case confirms the limited role that evidence often plays in health policy decisions (Fafard, 2008). According to one alderman that we interviewed: "It's just frustrating for me … But I'm sure a few people, especially those in the public policy realm, especially at the lower levels of government, or this level of government, we don't have the resources to go through a 6-inch pile of research … And I find it very frustrating that there's no clear answers" (C3).

Policy Characteristics and Context

One factor identified in the literature—albeit less often than others—that can affect the likelihood of termination is the nature of the policy itself (Doberstein, 2011; Kirkpatrick et al., 1999; Lamothe & Lamothe, 2015). In our case, relevant factors include jurisdictional issues, and the speed of the decision.

First, a number of the city councillors that we spoke with suggested that their support for termination lay partly in unhappiness with the perceived downloading of economic responsibilities from the provincial to the municipal level of government. This point was partly anchored in jurisdictional issues around fiscal responsibility for health policy; specifically, some argued that "health" is a provincial responsibility and therefore the costs associated with fluoridation should fall to the province.[10] Several councillors lamented this perceived shift as well as the fact that municipalities were increasingly being forced to address issues for which they had neither the requisite resources nor administrative capacity, such as poverty and affordable housing. One alderman noted that if the province had taken over responsibility and funding of fluoridation, "I think that would have very clearly solved the problem. I think that would have swung the council the other way" (C2). These jurisdictional issues are an example of conflict over division of power more generally, a common practice within Canadian federalism, but also of a shift in policy image (Baumgartner & Jones, 2009) and of a scape-goating strategy (Bauer et al., 2012).

Second, Kirkpatrick et al. (1999) point out that when termination efforts are conducted swiftly, the chances of success increase. There are several indications that the circumstances of the deliberations, and in particular, the relatively short lead-up time, made it difficult for supporters of fluoridation to participate in an effective way thus increasing the likelihood of termination. One alderman commented, "the notice of motion was tabled very shortly after the election, and I think the community was blindsided. There were people who thought that there wasn't enough time, to even know what was going on, never mind prepare for the consultation" (C5). Though the decision to refer the motion to the January SPC-UE meeting provided an opportunity for public input, the very short time available to prepare for the meeting—two weeks—offered an advantage to those who were already actively engaged on the issue. As one local health professional interviewee suggested: "Well, we're busy dentists with patients. You can't cancel at the last minute" (H2).

Similarly, although a plebiscite on the issue was considered, it was rejected by a council vote of 5 to 8 (City of Calgary, 2011d). Rejecting a plebiscite not only limited public debate on the question but also ensured that a decision was rendered much

more quickly than it would have been otherwise. Based on precedent (Carstairs, 2010), a plebiscite in 2011 was not an unreasonable option. A local health professional emphasized that a plebiscite would have provided the impetus and time to secure support from other organizations and mount a more-organized campaign: "If (we) had time, and Calgary Dental Society, Alberta Dental Association, the Canadian Dental Association had got together and given us support and funding for some kind of, like you could phone in and get the research, if we had that opportunity, or if it was a plebiscite around the city, I'm sure [fluoride would] still be in the water" (H2).

Synthesis: Policy Windows and Entrepreneurs

Geva-May (2004) suggests that Kingdon's (1984/2011) concepts—developed to understand policy initiation—add significant explanatory purchase to policy termination. Our findings suggest that two of these concepts assist in understanding Calgary's decision to terminate fluoridation in 2011: the policy window and the policy entrepreneur.

The concept of a policy window, or an opportunity for change that occurs when problems, policies (solutions), and politics converge, is helpful for synthesizing, or bringing together, the various factors contributing to policy termination in Calgary. In 2011, the framing of concerns over water fluoridation was multidimensional, focussed on its overall effectiveness, the costs associated with required upgrades and ethical concerns relating to individual freedoms. These arguments held sway with a significant number of city councillors. Our interviewees noted that the importance of the costs associated with fluoridation—both the annual cost, $750,000, coupled with the required $6 million infrastructure upgrade—necessitated a re-evaluation of the fluoridation policy. As, if not more, important, however, was the prominence of ethical concerns surrounding fluoridation; that is, that regardless of the issues of benefits from and safety of fluoridation, there was a belief that the policy of mass medication needed to end. Two years earlier, only 6 of 13 members of council agreed that fluoridation was a problem in need of a solution. A significant change in membership, in decision-making style, and in political orientation in municipal council following the 2010 election, however, opened the *politics* window. And one policy in particular, fluoridation termination, was the *policy* solution put forward to address the perceived problem in the new council climate.

According to Kingdon (1984/2011), the coupling of the three streams occurs as a result of the actions of one, or at most a few people, who are prepared to take advantage of the opening of the window. In our case study, the notice of motion to cease fluoridation in 2011 was led by one alderman, Druh Farrell. First elected in 2001, she was a veteran of the fluoridation debates in the city, and a vocal critic of fluoridation. In both 2009 and 2011, she spearheaded the drive to get the issue on the council's agenda; in 2011, her strategy for success included first securing support from a large number of council members at the Notice of Motion Stage, and then ensuring the issue was addressed quickly, both by rejecting the push to put the issue to a plebiscite and by openly rejecting the proposal to allow an expert panel to summarize the evidence on the issue in a report to council. As she noted, "A plebiscite would be the absolute worst way to make a public health decision" and "Even if it was

80% who supported [water fluoridation] … those 20% do not want this, they want the option and they want clean, safe drinking water. Period" (City of Calgary, 2011b). Interviewees described her as a "key champion" (C3) of the issue and as someone with "a passion for it" (C5). And one policy in particular, fluoridation termination, was the *policy* solution put forward to address the perceived problem in the new council climate. The near absence of ideologically based coalitions on this Calgary council (unique among large Canadian cities—see cityblocs.ca), with voting blocs formed anew on most issues, meant that it was essential to provide multiples frames for the problem to bring a sufficient number of members into the coalition. As an incumbent with knowledge of the institutional constraints and opportunities afforded by the simple municipal governance structure, Farrell's strategy for ending water fluoridation was ultimately successful.

Conclusion

Our study adds to the existing policy termination literature via a case study of policy termination at the local level in the Canadian context for a novel policy domain: community water fluoridation.

First, our findings underscore the importance of some of the factors identified in the literature on termination, such as the speed with which a decision is made, noted above (Kirkpatrick et al., 1999). The importance of lobbies both for and against the policy in question to policy termination is another (Kirkpatrick et al., 1999). Large and well-organized lobbies are those most likely to be effective (Olsen, 1965) and in the 2011 Calgary case, the anti-fluoridation lobby was determined and effective, even if small in size. Financial imperatives, notably the cost savings accruing from the elimination of infrastructure upgrades to water treatment plants, provided an attractive and easily defensible argument for ending fluoridation. Finally, the context—politics at the local level—mattered in part by magnifying the role that lobbying played in the outcome, and the nature of the policy itself—complex, scientific, and technical—was vital to the outcome given evidence uncertainty.

Second, our findings suggest that Geva-May's (2004) arguments for applying Kingdon's model to policy termination are valuable in adding to our understanding of the conditions that increase the likelihood of the outcome. In particular, a key factor for termination in 2011 was the opening of a policy window made possible by the 2010 municipal election, combined with the presence of a policy entrepreneur. The 2010 election led to an important shift in decision-making style and overall political orientation on the city council. The difference was key to generating sufficient support for the motion introduced in 2011 to almost guarantee its passage, a motion almost identical in wording to one introduced two years earlier in 2009. The importance of a shift in government or political orientation for policy termination has been identified (de Leon, 1983; Lamothe & Lamothe, 2015; Kirkpatrick et al., 1999; Turnhout 2009), although framing it as the opening of a policy window is unique to Kingdon's (1984/2001) model.

We also found strong support for the importance of Kingdon's concept of a policy entrepreneur for taking advantage of the opening of such a window and to counter the active forces working against termination generally. The presence of a skilled

policy entrepreneur ensures that the opening of a window is recognized and acted upon to bring about policy termination (Geva-May, 2004). And in the case of water fluoridation in Calgary in 2011, Alderman Druh Farrell was clearly identified as the driver behind the campaign to end fluoridation. Passionate about and committed to removing fluoride from the city's water, she was successful in promoting issue frames that convinced a majority of council members of the need to end fluoridation. The role of human agency and of the policy entrepreneur in policy change more broadly has not received much attention in part because their actions can appear idiosyncratic (Mintrom & Norman, 2009). As our case shows, certain factors were in play that provided the potential for the termination of water fluoridation including but not limited to its role as a cost-saving measure. The presence of a skilled and committed entrepreneur, however, ensured that the issue made it onto the agenda in spite of its appearance only two years earlier and that a reframing of the problem beyond the financial provided the support of a coalition that ensured the policy's success.

The nature of the policy itself—the addition of fluoride to city water supplies to reduce the incidence of dental caries—is especially important for understanding the decision to support termination. The issue is highly technical and scientific, with evidence subjected to competing interpretations (Fafard, 2008), and as noted in our interviews, making it complex and difficult to process and evaluate. The particular ineffectiveness of the pro-fluoridation lobby in 2011, combined with the overall decline in the willingness to defer to traditional experts on scientific and technical policy questions (Armfield, 2007), introduced evidence uncertainty into the policy discussion. For some members of city council, this evidence uncertainty limited any possibility of adequately evaluating fluoridation's overall safety and/or effectiveness, and heightened the importance of the policy entrepreneur and the dominant advocacy lobby in the decision-making process (Fafard, 2008). Accepting the problem as one primarily of the ethics of mass medicating or as a financial imperative removed altogether the need to consider the scientific evidence.

As noted earlier, much of the literature on policy termination has focused on policy at the national level and in the U.S. context. An in-depth examination of policy termination at the local level, within a federal system, points to several factors deserving of greater attention in the termination literature. First, lobbying opportunities are likely more easily accessible at the local level of government, requiring less organizational capacity and infrastructure of lobbyists than might be the case at higher levels. In our case, local anti-fluoridation advocates were able to meet regularly with alderman, in some instances weekly. Moreover, the limited resources available to local governments to undertake independent study of issues potentially further enhances the importance of lobbies at the local level.

Additionally, inter-governmental tensions within federal systems have not had a prominent place in the termination literature. Yet our case suggests the policy decisions such as termination can hinge on the structural constraints embedded within a federal system, particularly ones that create an incentive for the local level of government—one with limited authority and fiscal capacity—to shift blame onto a higher level of government.

This study of community water fluoridation has also identified a topic for future study: the role of policy diffusion within policy termination. The number of barriers

in place to restrict policy termination is well known. Less well known is the role played by the ability of jurisdictions to point to terminations in similarly situated jurisdictions for the success of policy termination overall.

According to Fafard (2008, p. 5), for some, "health public policy becomes first a question of generating evidence about 'what works' […] and second using sophisticated techniques to transfer this evidence to decision-makers on the understanding that policy and program decisions will, naturally, be based on the evidence." As he correctly points out, however, evidence is socially constructed, with multiple and often competing policy frames vying for dominance in the decision-making process.[11] In the Calgary case, the decision-making process included contestation not only over the very policy problem that needed to be addressed, for example, ethics, preventing dental caries, financial imperatives, or health safety, but also over the scientific evidence brought to bear on the search for a solution to the problem. With increasingly less deference accorded to traditional scientific expertise and research and the ease with which the internet allows for the spread of evidence of varying quality (Armfield, 2007), the importance of the ideational and discursive elements of health policy decision making will necessarily increase.

The policy termination literature has lamented the rarity of termination as an obstacle to advancing scholarship in this field. Water fluoridation offers an important research opportunity in this regard, including lending itself to comparative analysis, an important way to strengthen our understanding of policy termination (Ferry & Bachtler, 2013; Jordan, Bauer, & Green-Pedersen, 2013). As the Calgary case reveals, the specific context within which policies are terminated is key to understanding the factors that make policy termination possible. Further study of fluoridation cessation, and especially in the Canadian municipalities that followed Calgary in the decision to end water fluoridation, provides an opportunity for identifying how common this set of factors actually might be.

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Notes

1 We use the term *policy termination* throughout this paper as it normally implies clear and conscious decisions to end a policy or program. As noted by Bauer et al. (2012), however, a number of additional labels have been employed to denote related phenomena, including retrenchment and dismantling, each adopting different theoretical frameworks and/or methods of investigation. More broadly, policy termination is also an example of the more encompassing concept of policy change. Our focus is specifically on policy termination and the literature addressing this policy phenomenon.

2 As noted by one reviewer, a number of alternative theoretical frameworks could undoubtedly shed light on the potential causes of policy termination in the Calgary case. We identify these throughout the paper where we believe they have to potential to add insight into the process of termination. One such framework is policy learning that "highlights the importance to policy-making of learning how best to avoid policy failure" (Howlett, 2012). However, as the key goal is to assess whether Kingdon's model adds depth to our understanding of the process of policy termination as suggested by Geva-May (2004),

Mintrom and Norman (2009), and Zohlnhöfer et al. (2015), our theoretical focus mirrors that found in the policy termination literature generally.

3 Geva-May (2004) notes that the concept of windows parallels that of Baumgartner and Jones's (2009) punctuated equilibrium.

4 This study was approved by the Conjoint Health Research Ethics Board at the University of Calgary (Ethics ID REB15-2402).

5 After several years of debate, city council voted in 2010 to change the title of council members from "Alderman" to "Councilor," a change that took effect in 2013 (Valentich, 2009). We retain the term "Alderman" to reflect its usage at the time of the 2011 fluoridation deliberations.

6 The Local Authorities Election Act was amended in 2012 and beginning in 2013, municipal elections now take place every four years.

7 The mayor and one alderman were not present for the vote on the motion.

8 The 2009 motion included a provision (absent from the 2011 motion) that $250,000 in each of three years be directed to providing fluoride treatments to children in low-income families. In the January 2011 council meeting, an amendment to the 2011 motion was approved directing the city administration "to establish a stakeholder group to identify a funding amount to be taken from the monies saved from the discontinuation of fluoridation, and the appropriate administrative body, in order to provide fluoride treatment for children of low income families."

9 Interview participants are denoted using initials corresponding to their role: C = city councilor (alderman); H = health professional (e.g., dentist or doctor) or public health professional; M = media.

10 This appears to be an example of a conflation of health and health care. While health care does indeed falls predominantly under provincial jurisdiction in Canada, municipal government is very much involved in public health (Hancock, 1993).

11 We thank one reviewer for pointing out the potential for the theory of social construction and policy design to shed light on termination in the water fluoridation policy sphere, and especially how narratives focused on target populations influences policy choice is this arena (see Pierce et al., 2014). We encourage future research in this area.

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