

# Academic Alternate Relationship Plans for internal medicine: a lever for health care transformation

ALLISON BICHEL, MARIA BACCHUS,  
JON MEDDINGS, JOHN CONLY

Affiliations at the time of submission: **Allison Bichel**, MPH MBA, was project manager for Innovation Initiatives in the Department of Medicine, Calgary Health Region, and University of Calgary, Calgary, Alberta. **Maria Bacchus**, MD, was vice chair of the Department of Medicine, Calgary Health Region, and University of Calgary, Calgary, Alberta. **Jon Meddings**, MD, was chairman of the Department of Medicine, University of Alberta, Edmonton, Alberta. **John Conly**, MD, was chairman of the Department of Medicine, Calgary Health Region, and University of Calgary, Calgary, Alberta.

**Correspondence:** Dr. John Conly, Department of Medicine, University of Calgary, Foothills Medical Center, 9th Floor North Tower, 1403 29th St. NW, Calgary AB T2N 2T9; [john.conly@AlbertaHealthServices.ca](mailto:john.conly@AlbertaHealthServices.ca)

**Funding:** This work was funded in part by the departments of medicine at the University of Calgary and University of Alberta.

**Competing interests:** None declared.

**A**CADEMIC ALTERNATE RELATIONSHIP PLANS (AARPs) were implemented in the departments of medicine in the Faculty of Medicine and Dentistry at the University of Alberta in 2002 and the Faculty of Medicine at the University of Calgary and Calgary Health Region in 2004. These plans, which compensate physicians on a contractual instead of a fee-for-service basis, have strengthened the ability of the two departments to deliver on their clinical, research and education missions. This commentary describes why and how they were developed.

To understand the context in which these AARPs were developed, recognition of the health care reform agenda in Canada and specifically in Alberta is required. Several national and provincial reports, including the Romanow,<sup>1</sup> Kirby<sup>2</sup> and Mazankowski<sup>3</sup> reports, suggested the need to reframe and refocus the health care system to ensure access, quality and sustainability. These reports

all recommended that alternative mechanisms be considered for physician remuneration in an effort to encourage innovative health care delivery. The Mazankowski report,<sup>3</sup> which resulted from a review of Alberta's health system, not only recommended alternative approaches for physician remuneration but also set specific targets. The Auditor General of Alberta, in consecutive annual reports<sup>4-7</sup> (1998-2002), highlighted several issues: physicians needed to reduce their reliance on fee-for-service income to support their work in medical education and research; stakeholders in the health care system needed to understand that the scope of the work conducted by physicians in academic medicine went beyond seeing patients (the only work for which they were remunerated at the time); and inequities in physician remuneration in academic centres needed to be addressed.

Before the inception of the AARPs in Calgary and Edmonton, the two departments of medicine were experiencing similar challenges, many of which were common across Canada: the province's population was growing significantly, the population was aging, demand for specialist services was increasing, there were substantially fewer physicians in the workforce than needed (a situation that was projected to continue), physicians were burning out, the demand for medical education was increasing, innovative care models needed to be developed to meet public expectations, and fee-for-service clinical earnings had increased significantly during the 1990s, which made it difficult to recruit academic physicians.<sup>8-10</sup>

The growth rates of the metropolitan populations of Calgary and Edmonton were among the highest in Canada during the late 1990s and at the beginning of the new decade. Approximately 40%-50% of the new residents were foreign immigrants, creating challenges with respect to language barriers and complex health and social problems. A survey of Albertans in 2003 reported significant concerns regarding specialist access, with only 38% of respondents reporting having easy access to specialist services.<sup>10</sup> Both departments already had far fewer physicians than they needed, and the situation was expected to get worse with the projected retirements of senior faculty members. In Calgary, a time-motion study revealed that the average department member was working at a 1.20 full-time equivalent (FTE), excluding on-call hours, and many were working well above this level.<sup>8</sup> Furthermore, significantly more women were expected to qualify as new medical specialist physicians than in the past, which was expected to add to the workforce deficit. The FTE model proposed by the Physician Resource Planning Committee of the Alberta Medical Association and Alberta Health and Wellness used a work-week discount

factor of 0.81 for female physicians, assuming that female physicians would work fewer hours per week than male physicians, that many of them would take maternity leaves and that they would shift away from heavy clinical loads earlier in their careers than their male counterparts.<sup>8</sup> There were serious concerns about physician burnout, which were not unique to Alberta.<sup>8</sup> A planned increase in the undergraduate class size in both Alberta medical schools was expected to increase the teaching needs at both the undergraduate and postgraduate levels.

The department of medicine at the University of Alberta had a practice plan in place before the adoption of the AARP that allocated clinical payments in a way that was intended to allow academic physicians to focus more on their department's academic mission. However, increasing demands on the practice plan's participants for clinical work were hindering the ability of the practice plan to fulfil this intention. The plan found itself with an increasing debt burden and the department found itself with an inability to recruit academic physicians. An AARP was expected to break with the model of incentives and disincentives prevalent in the traditional fee-for-service system and instead provide a mechanism that would reward physicians for innovative practice patterns independent of patient volume and provide incentives for greater use of interdisciplinary and preventive approaches to improving overall population health.

The process used to develop the AARP was based on a framework established within Alberta Health and Wellness, which included the preparation of a letter of intent, a full proposal, a service delivery plan, governance and accountability measures, a budget and workforce plans. The initial agreement in Edmonton included a services agreement between the regional health authority and participating physicians; a grant agreement between the faculty and the provincial ministries of advanced education and learning and health and wellness that included expected outcomes, performance measures and targets; and the actual alternative payment plan. An agreement also had to be reached with the Alberta Medical Association. After 2003 the AARP process evolved with the establishment of the tri-lateral agreement between the respective health authorities, the Alberta Medical Association and Alberta Health and Wellness, but the core elements were retained.<sup>11</sup> The AARP agreement, which commenced in August 2004 in Calgary, followed the new process.

The leaders and individual members of the divisions within the departments of medicine at the two universities had to do considerable work once the agreement

was reached. Communication about the AARP was key, as participation in the plan was voluntary. The leaders of each division established objectives for their division and circulated them to their members. These included developing and implementing innovative models of health care delivery, designing new practice patterns, improving recruitment and retention, improving the national competitiveness of the division, ensuring that the division and its members were fully engaged in educational activities, enhancing opportunities for medical research, fostering the ability of division members to assume leadership roles, ensuring that remuneration was adequate and ensuring that workloads within the division were fair and equitable. Stakeholders—Alberta Health and Wellness, the Alberta Medical Association, Alberta Advanced Education and Technology, the faculties of medicine at the two universities and the regional health authorities—expected results consistent with the goals of the AARP: adequate physician complements, innovative care delivery, improved access to medical specialists, delivery of high-quality care, delivery of high-quality education to health care learners, greater research capacity, demonstration of effective governance and accountability.

Data collected from multiple sources in both Edmonton and Calgary before and after the implementation of the AARP were evaluated by the same external evaluator using the same methodology each time. This before–after analysis was completed using specific indicators in each CARE pillar: clinical care, administration, research and education.<sup>12,13</sup> Descriptive epidemiologic analysis was conducted and comparisons of observed and expected events were analyzed using a Poisson distribution, with a  $p$  value < 0.05 considered significant. In Edmonton, access to specialist services improved: clinical full-time equivalents increased by 35%, from 30.5 in 2001 to 41.4 in 2004, and clinical service volume increased by 23% (calculated from data shown in Table 1). In Calgary, clinical workload (patient encounters), including outpatient contacts with alternative care providers and telehealth contacts, increased by 50% (Table 2). A survey of 135 physicians<sup>12</sup> revealed that 63%, 64% and 56% of physicians in Calgary felt that the AARP had had a positive effect on their ability to spend more time with patients with complex needs, implement innovations and provide interdisciplinary care, respectively.

Separate innovation funding led to enhanced linkages with primary care physicians, the development of central referral and triage processes, support for interdisciplinary models of care, the application of clinical practice guidelines and the creation of new specialty

**Table 1: Clinical workload of physicians participating in the Academic Alternate Relationship Plan (AARP) in Edmonton**

Indicator	Pre- AARP		AARP years			Change* n (%)	p value
	2000	2001	2002	2003	2004		
<b>FTEs /job description</b>							
Clinical teaching	23.4	23.6	28	31.3	33.4	9.8 (41.5)	0.04
Clinical non-teaching	17.6	18.7	21.2	23.8	24.7	6.0 (32.1)	
<b>Shadow billing (IP &amp; OP) †</b>							
Service episodes	180 721	181 216	191 677	213 570	222 496	41 280 (22.8)	< 0.001
Service episodes/ FTE	6 158	5 951	5 448	5 410	5 381	-570 (-9.6)	< 0.001
Unique patients served	42 542	41 987	42 893	43 643	47 176	5 189 (12.4)	< 0.001
<b>Inpatient trends</b>							
Inpatient cases	4 239	4 200	4 271	4 357	4 578	378 (9.0)	0.003
<b>Outpatient trends</b>							
Multi-divisional clinic visits‡	57 800	60 623	66 462	69 272	74 417	13 794 (22.8)	< 0.001
Medicine clinic outpatient days	36 969	32 585	34 606	34 848	32 040	-545 (-1.7)	
<b>Outreach</b>							
Remote telehealth clinical cases, no.				18	652	652	
Outreach clinics, no.			224	227	194	-30	

Note: Further details are available in Lazurko (2005).<sup>13</sup> This table does not include work performed by alternative care providers (e.g., nurse practitioners) supervised by physicians participating in the AARP.

\* Calculated as the highest value after the AARP was implemented minus the highest value before the AARP was implemented.

† Shadow billings are billings submitted to the provincial government by physicians participating in the AARP as a record of services provided, not for reimbursement. Claims for both inpatient and outpatient services are included here.

‡ Same patient visiting more than one clinic in one day

IP = inpatient, OP = outpatient

**Table 2: Clinical workload of physicians participating in the academic alternate relationship plan (AARP) in Calgary**

Variable	Pre APRP		AARP years		Change n (%)	p value
	2003/04	2004/05	2005/06	2006/07		
<b>Encounters</b>						
Inpatient encounters *	24 635	23 780	24 658	28 806	4 171 (17)	< 0.001
Outpatient encounters †	49 134	57 950	63 293	69 840	20 706 (42)	< 0.001
Alternate care provider visits ‡			8962	7978	7978	
Telehealth contacts §	272	426	2101	4190	3918 (1 441)	< 0.001
<b>Total</b>	<b>74 041</b>	<b>82 156</b>	<b>99 015</b>	<b>110 815</b>	<b>36 774 (50)</b>	
<b>Actual FTEs</b>						
Total FTEs	108 ††	119.2	126.6	149	41 (38)	< 0.001
% Time spent in clinical	0.42	0.44	0.46	0.48	0.06 (14)	
Clinical FTEs	45.4	52.3	57.7	71.3	26 (57)	
<b>Ratios</b>						
Encounters per total FTE	686	689	782	744	58 (8)	
Encounters per clinical FTE	1632	1571	1715	1554	-79 (-5)	

Note: Further details are available in Lazurko (2007).<sup>9</sup>

\* Encounters with all physician types adjusted by resource intensity weight.

† Encounters involving face-to-face contact with a physician participating in the AARP.

‡ Additional outpatient face-to-face contacts with alternative care providers supervised by AARP physicians beyond the number of such encounters in 2004/05.

§ A typical 15-minute visit was assumed for each contact. The number of contacts was calculated by multiplying by 4 the number of hours of telehealth consultations with the patient present.

\*\* The denominator is the total number of FTEs.

†† Mean increase over previous 6 years was 4.1 FTEs/year.

FTE = full-time equivalent.

clinics (Table 3).<sup>14–16</sup> Recruitment increases (Tables 1 and 2) of 31.1% and 38% respectively for Edmonton and Calgary were significantly higher than the increases of 1%–5% in Edmonton and 4.3% in Calgary per annum in the 6 years preceding the implementation of the AARP. Combined teaching hours in Edmonton and Calgary increased by 22% and 25%, respectively, after the AARP was implemented. Research performance also improved: in Edmonton, the number of research FTEs in Edmonton increased by 39% and the percentage of their time that department members dedicated to research increased from 15% in 2003 to 21% in 2006 (Table 1).

Implementation of an AARP is complex, and we acknowledge that in other settings, individual parameters and context for implementation are important considerations. Evaluation of an AARP is complicated, and we acknowledge the limitations and intrinsic bias of the before–after methodology we used. The AARP was implemented in Edmonton and Calgary during an economic boom in Alberta, and some of the positive effects of the AARP that we noted may have been related to the province's robust economic growth. However, there are relatively few studies in Canada examining the effect of physician remuneration models on the efficiency and

quality of care in academic centres. The Queen's University alternative funding plan, which was established in 1994, has been assessed with a survey of the perceptions of referring physicians and specialists<sup>17</sup> and with a before–after analysis in that university's department of family medicine.<sup>18</sup> The perception survey revealed mixed results, but the before–after analysis demonstrated that after the alternative funding plan was implemented academic productivity improved, practice volume decreased by 10% and patient flow improved. In Nova Scotia, a recently completed audit of the alternative funding plan in the department of medicine at Dalhousie University suggested that it helped recruitment and retention and enhanced patient care.<sup>19</sup> Our analysis adds more robust results to this body of literature.

In Edmonton and Calgary, the introduction of an alternative funding plan significantly enhanced recruitment and clinical volumes, improved patient access to specialist services and helped the departments of medicine to fulfill their teaching and research missions. We believe that the introduction of AARPs has been the single largest contributor to the academic and clinical success of our departments and has been a major lever for health care transformation in our setting.

**Table 3: Evaluation of the outcomes of AARP innovation projects**

Project	Location	Results
Atrial fibrillation clinic	Calgary	The wait time to see a physician specialist decreased from 220 days in 2005 to 30 days in 2006. Before/after data collected for 68 patients showed that the introduction of the clinic reduced emergency visits by 82%, reduced hospital admissions by 56% and reduced average hospital lengths of stay from 5.0 days to 1.8 days.
Cardiac function clinic	Calgary	Before/after data collected for 103 patients showed that the introduction of the clinic reduced emergency visits by 83%, reduced hospital admissions by 69% and reduced hospital lengths of stay by 856 days.
Chronic cough	Calgary	The use of certified respiratory educators (CREs) was demonstrated to be safe, economical and effective in managing properly screened patients with chronic cough. The use of CREs may shorten the wait times of these patients for specialist consultation.
Endocrinology triage	Edmonton	This program has decreased wait times for urgent and priority referrals to less than 2 weeks. Most referrals can be accommodated within the same week by the person on call.
GI central intake	Calgary	This program has reduced wait times by 8% in spite of a 153% increase in referrals.
Nephrology central intake	Calgary	Central intake resulted in the launch of an urgent assessment clinic and a reduction in wait times of between 25% and 50% depending on urgency.
Pulmonary hypertension program	Edmonton	The wait time for diagnostic testing and consultation has decreased by 70%. Twenty percent of patients access more than 1 member of the interdisciplinary team.
Respiratory: induced sputum analysis	Calgary	For 65 of 122 patients with evidence of sputum eosinophilia, these programs changed the way their care was managed, which resulted in a 67% decrease in emergency visits and a 75% decrease in hospital admissions for these patients.
Rheumatology central intake	Calgary	Wait times decreased by between 15% and 37%, depending on the urgency of the patient's condition.

Note: See Gillis et al. (2008) for further information about the atrial fibrillation clinic<sup>14</sup> and Field et al. (2009) for further information about the chronic cough program.<sup>15</sup> Data reported in this table for Calgary innovation projects are from Bichel, Tremblay and Mantler (2007).<sup>16</sup>

**Contributors:** Allison Bichel, as a consultant to the Calgary Health Region, was responsible for the implementation of the health service innovations for the academic alternate relationship plan in the Department of Medicine in Calgary, for the design and implementation of the evaluation of the innovations in Calgary and for preliminary collation of the data for this article. John Conly, Maria Bacchus and Jon Meddings conceived of this article, arranged for the full evaluation data of the academic alternate relationship plans from their respective sites to be obtained from Alberta Health and Wellness and act as guarantors for this article. Allison Bichel drafted the initial manuscript. All of the authors reviewed and revised the manuscript for critical content and approved the final version to be published.

## REFERENCES

- Romanow RJ. *Building on values: the future of health care in Canada*. Saskatoon: Commission on the Future of Health Care in Canada; 2002. Available from: <http://dsp-psd.pwgsc.gc.ca/Collection/CP32-85-2002E.pdf> (accessed 2010 Nov 22).
- Kirby MJL. *The health of Canadians: the federal role. Volume 6: Recommendations for reform*. Ottawa: Standing Senate Committee on Social Affairs, Science and Technology; 2002. Available from: [www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/soci-e/rep-e/repoct02vol6-e.htm](http://www.parl.gc.ca/37/2/parlbus/commbus/senate/Com-e/soci-e/rep-e/repoct02vol6-e.htm) (accessed 2010 Sept 2).
- Mazankowski, D. A framework for reform: report of the Premier's Advisory Council on Health. Edmonton: Government of Alberta; 2001. Available from: [www.health.alberta.ca/documents/Mazankowski-Report-2001.pdf](http://www.health.alberta.ca/documents/Mazankowski-Report-2001.pdf) (accessed 2010 Sept 2).
- Valentine P. Annual report of the Auditor General of Alberta 1998–99. Edmonton: Government of Alberta; 1999. Available from: [www.oag.ab.ca/files/oag/ar1998-99.pdf](http://www.oag.ab.ca/files/oag/ar1998-99.pdf) (accessed 2010 Sept 2).
- Valentine P. *Annual report of the Auditor General of Alberta 1999–2000*. Edmonton: Government of Alberta; 2000. Available: [www.oag.ab.ca/files/oag/ar1999-00.pdf](http://www.oag.ab.ca/files/oag/ar1999-00.pdf) (accessed 2010 Sept 2).
- Valentine P. *Annual report of the Auditor General of Alberta 2000–2001*. Edmonton: Government of Alberta; 2001. Available from: [www.oag.ab.ca/files/oag/ar2000-01.pdf](http://www.oag.ab.ca/files/oag/ar2000-01.pdf) (accessed 2010 Sept 2).
- Dunn FJ. *Annual report of the Auditor General of Alberta 2001–2002*. Edmonton: Government of Alberta; 2002. Available: [www.oag.ab.ca/files/oag/ar2001-02.pdf](http://www.oag.ab.ca/files/oag/ar2001-02.pdf) (accessed 2010 Sept 2).
- Department of Medicine, Alberta Health Services. *Proposal for an alternate funding plan*. Calgary: Calgary Health Region; 2003.
- Department of Medicine, Alberta Health Services. *Physician resource planning working group. Key findings and recommendations*. Calgary: Calgary Health Region; 2003.
- Health Services Utilization and Outcomes Commission. *Health services satisfaction: survey of Albertans 2003*. Calgary: The Commission; 2003. p. 3. Available from: [www.assembly.ab.ca/lao/library/egovdocs/alhsuo/2003/142772.pdf](http://www.assembly.ab.ca/lao/library/egovdocs/alhsuo/2003/142772.pdf) (accessed 2010 Sept 2).
- Alberta Health and Wellness. *Academic alternate relationship plans*. Available from: [www.health.alberta.ca/professionals/ARP-Academic.html](http://www.health.alberta.ca/professionals/ARP-Academic.html) (accessed 2010 Sept 2).
- Lazurko M. *Final evaluation report. Academic alternate relationship plan*. Calgary: Department of Medicine, University of Calgary and Calgary Health Region, Department of Medicine; 2007.
- Lazurko M. *Final evaluation report. Alternate funding plan*. Edmonton: Department of Medicine, University of Alberta; 2005.
- Gillis AM, Burland L, Arnburg B, Kmet C, Pollak PT, Kavanagh K, et al. Treating the right patient at the right time: an innovative approach to the management of atrial fibrillation. *Can J Cardiol* 2008; 24(3):195–198.
- Field SK, Conley DP, Thawer AM, Leigh R, Cowie RL. Assessment and management of patients with chronic cough by a certified respiratory educator. A randomized controlled trial. *Can Respir J* 2009;16(2):49–54.
- Bichel A, Tremblay A, Mantler E. *Department of Medicine and Medical Services alternative relationship plan innovation initiatives. Final evaluation report*. Calgary: Calgary Health Region; 2007. Available from: [www.departmentofmedicine.com/d\\_medicine/pages/news%20files/Innovation%20Report%202007.pdf](http://www.departmentofmedicine.com/d_medicine/pages/news%20files/Innovation%20Report%202007.pdf) (accessed 2011 Feb 2)
- Godwin M, Shortt S, McIntosh L, Bolton C. Physicians' perceptions of the effect on clinical services of an alternative funding plan at an academic health sciences centre. *CMAJ* 1999;160(12):1710–1714.
- Godwin M, Seguin R, Wilson R. Queen's University alternative funding plan. Effect on patients, staff, and faculty in the Department of Family Medicine. *Can Fam Physician* 2000;46:1438–1444.
- North South Group Inc. *Audit of the Department of Medicine alternative funding arrangement*. Halifax: Nova Scotia Department of Health Physician Services; 2005. Available from: [www.gov.ns.ca/health/reports/pubs/Alternate\\_Funding\\_Audit\\_2004.pdf](http://www.gov.ns.ca/health/reports/pubs/Alternate_Funding_Audit_2004.pdf) (accessed 2010 Nov 23).

**Citation:** Bichel A, Bacchus M, Meddings J, Conly J. Academic Alternate Relationship Plans for internal medicine: a lever for health care transformation. *Open Med* 2011;5(1):28-32.

**Published:** 8 February 2011

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