

**FAMILY PHYSICIAN'S PERCEPTIONS OF ACADEMIC DETAILING FOR  
RHEUMATOID ARTHRITIS**

by

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## **Abstract**

Rheumatoid arthritis (RA) is a chronic inflammatory polyarthritis, affecting 1% of the adult population, which left untreated can lead to progressive physical disability, joint damage, and premature mortality. In the last decade, there has been a paradigm shift in the treatment of RA, with its goal being eradication of inflammation. This message of paradigm shift in the treatment to early, aggressive and sustained use of Disease Modifying Anti-Rheumatic Drugs, has not yet reached all Family Physicians (FPs). Academic Detailing (AD) involving visits by trained health care professionals, like pharmacists, to physicians in their offices to provide evidence based information on a selected topic, seems to be a promising technique to influence the behaviour of FPs. To our knowledge, there are no publications of use of AD for RA. Our study, through a mixed methods approach, aims to fill this knowledge gap for understanding FPs perceptions of AD for RA management. Before investing in implementation of AD for RA as a health service strategy, it is necessary to know if FPs perceive AD as a useful, acceptable and feasible technique to receive information about RA management.

Our systematic review showed the effectiveness of AD at optimizing prescription behaviour of FPs, with a modest effect size in majority of studies reviewed. Survey findings suggested that most FPs rated AD as a useful and convenient CME technique and is well accepted. FPs appreciated AD for its educational value, convenience, one-on-one interaction, short duration; subject expert review of content, and practical, evidence based and focused content. Some FPs mentioned disadvantages like difficulty incorporating AD during work days, lack of dedicated CME time, lack of time for detailed discussions, lack of time to consult information provided by AD, and delivery of standardised messages. AD was acceptable to most FPs as demonstrated by the outcomes of this visit, including improved confidence, anticipation of changes in RA management and willingness to receive AD in future.

Overall, AD was perceived as a useful, acceptable and feasible CME technique, by FPs, to receive information about RA management and hence to optimize care.

# **Preface**

## **Statement of Co-authorship**

I composed this thesis in its entirety, with guidance and input from Dr. Diane Lacaille, Dr. Wendy Hall, and Dr. Janusz Kaczorowski. Dr. Charlie Goldsmith was consulted for all the statistical issues. A separate manuscript will be prepared from chapter 2 (systematic review) and for rest of the thesis.

## **Statement of research ethics approval**

This thesis was conducted under ethics approval from University of British Columbia's Behavioural Research Ethics Board (H11-00820).

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## **Glossary**

RA – Rheumatoid arthritis

DMARD – Disease modifying anti-rheumatic drug

RCT – Randomised controlled trial

BC – British Columbia

HAQ – Health assessment questionnaires

NSAID - Non-steroidal Anti-inflammatory Drug

T2T – Treatment to target

FP - Family physician

AD – Academic detailing

EOV – Educational outreach visit

COX-2 – Cyclooxygenase -2 inhibitors

PCM – Paracetamol

BDZ - Benzodiazepines

CME - Continued medical education

CADC - Canadian academic detailing collaboration

PAD - Provincial academic detailing service

MeSH – Medical subject headings

CONSORT - Consolidated standards of reporting trials

EPOC - Cochrane effective practice and organisation of care group

STROBE - Strengthening the reporting of observational studies in epidemiology

SMD - Standardised mean difference

CI – Confidence interval

DDD – Daily defined doses

OR – Odds ratio

IQR – Inter quartile range

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# Chapter 1: Introduction

## 1.1 Treatment for Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a chronic inflammatory polyarthritis (with varying systemic features) that affects 1% of the adult population (1, 2). It is three times more frequent in women than men (3). If left untreated it leads to progressive physical disability, progressive joint damage, and eventually premature mortality. Mortality rates are increased in RA compared to the general population (4-8). One-third to one-half of premature deaths in RA are due to increased cardiovascular disease including acute myocardial infarcts and cerebrovascular accidents. A meta-analysis of published data showed that cardiovascular disease mortality is increased by almost 50% in RA patients as compared to the general population (9).

Progression of disease from onset of symptoms to joint damage, which is irreversible, may occur very quickly in RA and initiation of therapy with Disease Modifying Anti Rheumatic Drugs (DMARDs), to prevent joint damage, is recommended within 2 months of symptom onset (10). A therapeutic window of opportunity, early on in the disease course, has been identified during which RA patients are more responsive to therapy. Treatment during this time frame increases the chances of optimal outcomes such as (a) clinical remission when swelling, pain and fatigue are gone with no further joint damage and medication continued (b) true remission with the absence of signs and symptoms of significant inflammatory disease activity even when the medications are discontinued (11) and (c) arrest of disease progression as seen by radiographic and functional outcome measures like Sharp's score, Larsen score (12), and health assessment questionnaires (HAQ) (13). The goals of RA management are no longer to simply control symptoms, but to eradicate inflammation in order to prevent or slow down joint damage, loss of

function and premature mortality (1). The new approach represents a paradigm shift in treatment.

The traditional treatment paradigm, also known as the pyramid approach, recommended treatment with Aspirin and other Non-steroidal Anti-inflammatory Drugs (NSAIDs) as first line therapy, to control inflammation. Disease Modifying Anti-rheumatic Drugs (DMARDs) were only recommended at a later stage during the disease course if physical disability resulted from uncontrolled pain or if joint damage occurred (14-16). The pyramid approach was based on the concept of matching potential drug toxicity with disease severity; therefore, DMARDs were avoided early on, despite their potential effectiveness, due to concerns about toxicity (17). Unfortunately, long term epidemiological studies demonstrated that this strategy did not suppress the inflammation sufficiently to prevent joint damage, which led to joint deformities and progressive loss of function.

The development of new more effective DMARDs and data showing that when monitored closely, DMARD toxicities are rare supported a change in the approach to RA treatment (16). Early, aggressive and consistent use of DMARDs is now recommended (16, 18). DMARDs control inflammation by interfering with the auto-immune reaction that causes inflammation. They are known for their slow onset of action, their ability to prevent joint damage and slow down the progression of erosions, and their ability to induce remission (19). Some of the commonly used DMARDs for RA are methotrexate, sulfasalazine, hydroxychloroquine, gold (aurothiomalate, auranofin), azathioprine, cyclosporine, and leflunomide (20).

The new treatment strategy involves using DMARDs very early after the onset of RA, as soon as the diagnosis is confirmed, and using them continuously throughout the disease course,

with the goal of preventing joint damage and hence physical disability (21) . Disease activity is assessed regularly, every 3-6 months and drug therapy adjusted; each drug is increased to its maximum dose, DMARDs are substituted, or a new DMARD is added to the existing protocol, until the target of no inflammation is reached and maintained (14). This approach is called treatment to target approach ('T2T') (11). The aim of this approach is to achieve absence of signs and symptoms of significant inflammatory disease activity, i.e. clinical remission, in order to maintain a normal functional and social life. In patients with long-standing disease, low disease activity may be an alternative to remission.

Despite established standards of care for RA, some gaps in care exist. The delivery of care for RA has been consistently found to be suboptimal in various studies (22-30). In a population-based study in British Columbia (BC), Lacaille et al. found low rates of DMARD use, low rates of referral to rheumatologists, and RA care not in accordance with the recommended guidelines when family physicians (FPs) and internists were the only care providers for RA (22). They found that 46%, 59% and 64% of RA population in BC received all their RA care from FPs over 5 year, 2 year and 1 year periods respectively (22). Similar results were also seen in Quebec, Ontario and United States of America (23, 26). A population-based study in Quebec showed that new cases of RA are not being consistently referred to rheumatologists or other specialists (25). Long delays in care have also been found in other studies (26, 28, 31). These results highlight the importance of educating FPs to address the gaps in care identified in these studies. Moreover, because FPs function both as front-line caregivers and gatekeepers for access to specialists; they have a crucial role in ensuring RA patients receive timely and optimal care (32). Due to the low prevalence of RA (approximately 1%), FPs often develop less experience with diagnosis and management of RA (1). The important message of a

paradigm shift in the treatment of RA to early, aggressive and sustained use of DMARDs, as opposed to the traditional pyramid approach, has not yet reached all the FPs (22).

## **1.2 Family Physicians**

Family Physicians (FPs) are the first point of contact in the health care system for most Canadians. The clinical decisions made by FPs not only affect the health outcomes of the patients but also the health care they received. Due to the decision-making authority of FPs over access to other health care services, they are often called the gatekeepers of the Canadian health care system (33, 33). A report published by Health Council of Canada in 2010 focused on the critical need to support FPs in making the best clinical decisions for patients and for the health care system (33). Previous studies have shown that strong primary health care systems are associated with improved health care outcomes and significant cost savings (34, 35).

FPs play a very important role in the care of RA patients because FPs are the ones to identify and diagnose RA at its onset and provide appropriate care, including timely prescription of DMARDs and referral to a rheumatologist, before permanent joint damage occurs (1). Several studies have highlighted the importance of early diagnosis and treatment of RA to achieve better outcomes (36-38). The early introduction of DMARDs has been associated with better disease outcome (38). Moreover, the level of experience and comfort to diagnosis RA early and manage these patients with DMARDs, given the low prevalence of RA, varies among FPs. The variability points to the need for timely referral to rheumatologists (1).

In two qualitative studies, one consisting of interviews with FPs and a focus group study, with RA patients, family physicians, rheumatologists, and physical therapists, aimed at identifying barriers to optimal care for RA; the findings reflected lack of confidence, in many

FPs, in diagnosing RA, especially early on (39, 40). FPs explained they often waited to initiate therapy until a diagnosis was confirmed by a rheumatologist and most were more comfortable letting rheumatologists prescribe and adjust DMARD therapy. Moreover, FPs also indicated that they only referred to rheumatologists, if they thought DMARDs were needed. These results indicate the need to educate FPs about RA treatment and diagnosis, and reinforce the importance of early diagnosis and early treatment with DMARDs.

Changing physician practice behaviour, which involves changing well established clinical practice patterns, can be difficult (41). Clinical decision-making is a complex phenomenon which is affected by a number of factors: medical school training, medical research, continued medical education, peer consultations, patient expectations, time pressures and physician compensation (33). Almost all changes in clinical behaviour of FPs, especially prescribing, are due to a combination of factors (42, 43). In a study of factors changing the clinical practice of FPs and consultants, education was recognised as one of the three main reasons for making changes to clinical practice and accounted for about one third of the changes (42). Organisational factors and contact with the professionals were the other two factors identified in this study.

### **1.3 Academic Detailing**

Academic Detailing (AD), also known as public interest detailing or educational outreach visits, has been shown to be effective at optimizing different physician behaviours, including prescription of medications, as well as reducing healthcare costs (44-46). It is adapted from pharmaceutical drug detailing and is based on the behaviour change strategies which have been successfully used by pharmaceutical companies. AD involves visits by trained health care

professionals, such as pharmacists or physicians, to physicians in their offices to provide evidence-based information on a selected topic (44)

Soumerai et al. in 1990 listed principles of AD felt to be essential to improve clinical decision- making (44). The first important step of AD is defining a specific problem or identifying the behaviour to be addressed. The next step is to understand physicians' underlying motivations for specific behaviour. The importance of understanding underlying motivation was stated by Eisenberg in 1986. "In any effort to modify doctors' practices, those planning the intervention must understand why the doctors have chosen the services they are prescribing. The intervention must fit reasons for the behaviour. If the remedy does not suit the illness ... the result is likely to be failure" Eisenberg 1986 (47). Other features of AD include using two- sided communication, promoting active learner involvement, providing repetition and reinforcement, using big graphic materials, and offering practical alternatives (44). A review of ninety-nine randomised controlled trials, containing one hundred and sixty interventions of continuing medical education, has shown that AD is one of the few intervention categories, along with reminders, patient education materials, opinion leaders and multifaceted activities, that had improved physician performance (48). Passive dissemination of knowledge such as distributing practice guidelines does not seem to be sufficient to affect and improve clinical practices (49). Interventions based on theories of behaviour change, diffusion innovations, persuasive communication, and adult learning are often required to supplement the passive knowledge dissemination (50-53)

AD follows constructs of well-established theories for physician behaviour change, such as theory of planned behaviour, theory of reasoned action, and social cognitive theory (54-57). These theories, specifically the theories of reasoned action and planned behaviour, have been



successfully used to influence both patient and physician behaviour (57-59). AD is intended to change physician behaviour by providing evidence-based information, persuasive communication and altering their cognitions through tailored feedback and reinforcement (45, 56).

AD has been successfully used to improve care in various chronic diseases. Some of the studies involving use of AD in rheumatological conditions include: AD as a part of a multifaceted intervention to increase the use of osteoporosis preventive therapy and decreasing the use of corticosteroids for osteoporosis (60), AD to decrease inflammatory NSAIDs use for osteoarthritis management in elderly patients (61), AD to reduce prescription of cyclooxygenase-2 inhibitors for elderly patients with osteoarthritis (62), and AD to substitute Paracetamol for NSAID for rheumatic disorders in elderly people (63).

Habraken et al. in 2003 studied the feasibility and acceptability of AD in general practice to influence prescribing behaviour of physicians for non-steroidal anti-inflammatory drugs (64). Feasibility was studied in terms of time required for training of academic detailer, participation of physicians in the intervention, and duration of the AD visit. They studied the acceptability of AD by looking at the response rate of physicians who received the AD intervention and who completed the evaluation forms containing questions about the visit and willingness to receive AD in future. This study showed that AD is feasible in North-Flanders region of Belgium but the authors do state that it is not always possible to generalise the results from one study where it focused only on a specific topic in a specific health care system. AD visits were rated favourably by the participating FPs and 91% of previous users of AD wished to receive AD visits in future. This study was extended by a qualitative study conducted by Janssens et al. (2005) (65) to understand physicians' attitude towards AD and barriers to AD. They interviewed the physicians

who had previously received AD visits (accepters) and the physicians who had refused to AD visits (refusers). Most physicians who accepted the visit appreciated the visit but they also talked about some barriers to AD. They had doubts about objectivity of the material presented and did not find all the information new. The physicians who had refused the visits also mentioned the same barriers as the accepters of AD. The physicians who accepted the visit also mentioned some additional barriers including resistance to change, lack of time, not agreeing with the information, and finding information politically influenced. However, these studies were lacking detailed information from the physicians about the evaluation and usefulness of AD visit.

A study by Allen et al in 2007 explored FPs' perceptions of AD and the factors encouraging and discouraging the use of AD (45). Through questionnaire completion and interviews with the FPs, they found that 47% of the previous AD users rated its educational value higher than other forms of CME. Non-users of AD did not want to adopt AD in the future because they found using office time for CME acted as a barrier. The effectiveness of AD is discussed in detail in chapter 2 of the thesis.

To date there are no publications of use of AD for RA. However an abstract published in 2010, provides some information about a study conducted in France (66) where they used AD over the phone in order to make FPs aware of the importance of early detection and early referral of RA cases to rheumatologist. They evaluated the knowledge of participating FPs pre and post intervention and documented the improvement in knowledge. The two studies mentioned above that studied FPs' perceptions of AD and acceptability of AD were only focused on general practice (45, 64). There is still a knowledge gap in understanding FPs' perceptions of AD specifically for RA.

Given that RA has a low prevalence, FPs have limited exposure to RA patients which potentially affects their knowledge needs for RA. Considering the paradigm shift in the treatment of RA as discussed in the introduction, our study is aiming to improve compliance with the recent guidelines to optimize care. It is important to know what FPs think of the AD visit as a way of receiving information on RA management. Before investing in implementation of AD for RA as a health service strategy and in general, it is also necessary to know if FPs have suggestions to make AD better to address: their knowledge needs, the feasibility of delivering AD, and an increase in its acceptability.

#### **1.4 Aims**

- 1) To synthesise current knowledge on the effectiveness of AD to optimize drug prescription behaviour of FPs in primary care through a systematic review of the literature.
- 2) To understand FPs' perceptions of AD as a way of receiving information about RA and as a way of optimizing RA care.

#### **1.5 Research Questions**

- 1) What evidence is available in the literature about the effectiveness of AD at optimizing the drug prescription behaviour of FPs in primary care?
- 2) What are FPs' perceptions of AD as a way of receiving information about RA management and as a way of optimizing RA care?
- 3) Do FPs consider AD as a useful method for delivering information about the changes in RA treatment guidelines?
- 4) How well is AD accepted by family physicians?

5) How feasible is to deliver AD to FPs in a primary care setting?

For the purposes of this study, we defined feasibility as the practicability of implementing AD in a primary care setting to deliver educational information about RA management to FPs. Utility/usefulness in general is the measure of happiness and satisfaction gained from a service. We defined utility as the satisfaction obtained by FPs after receiving AD. In this study, acceptability refers to the extent to which the resource kit and AD visits met the needs of FPs regarding the management of RA.

## **Chapter 2: Systematic Review**

**Title:** Effectiveness of Academic Detailing to Optimize Medication Prescribing Behaviour of Family Physicians

### **2.1 Introduction and Background**

Gaps between research, policy and practice have been identified globally, with attention focused on making research based evidence available so that it can change the behaviours of health practitioners. However, changing physician behaviour, which is often established over many years of professional experience, is not easy (67). Physicians recognize that keeping up to date with the latest evidence and incorporating it into clinical practice is challenging and often occurs after long delays (68). Clinicians and family physicians (FPs) in particular, are faced with burgeoning scientific literature on a large number of topics. Current evidence suggests that dissemination of research results through peer reviewed publications and conventional educational formats, such as rounds or traditional continuing medical education (CME) lectures, have little effect on changing physician behaviour or healthcare outcomes (48, 49). Interactive techniques, such as audit/feedback, AD and reminders, have been shown to be more effective at changing physician behaviour and patient outcomes (69).

Academic detailing (AD) also called educational outreach visits (EOV) is a form of CME in which a trained health care professional, such as a physician or pharmacist, visits physicians in their offices to provide evidence based information on a selected topic (44-46). Some of the important elements of AD are : a) identifying and defining the problem and specific behaviours to be promoted or discouraged; b) investigating baseline knowledge and motivations for current practice patterns; c) defining clear, concise objectives for behaviour change; d) establishing credibility of the information provided by referencing unbiased information sources; e) providing

interactive and short sessions with opportunity for discussion; f) highlighting and reinforcing key messages with concise graphic information; and g) providing positive reinforcement by follow-up visits (44)

Although AD has a long history since Jerry Avorn first described it in 1983 (70) , its adoption by health policy planners as a health service intervention is still fairly new. In Canada, AD was first systematically introduced in Nova Scotia in 2001 (45) and is now implemented in six provinces (Alberta, British Columbia, Manitoba, Nova Scotia, Ontario, Saskatchewan), which have formed the Canadian academic detailing collaboration (CADC) (71, 72). The CADC was established in 2003 and received funding from Health Canada, for the evaluation of AD programs in Canadian provinces (71). In British Columbia, the provincial academic detailing service (PAD), funded by BC Ministry of Health Services Pharmaceutical Services Division was established in 2008 and is now available in all five health authorities (73).

The effectiveness of AD at influencing the knowledge and practice of health care professionals has been shown in previous systematic reviews (48, 69, 74, 75) with findings suggesting that the educational value of AD is generally rated highly by health care professionals. Furthermore, AD has also been found to reduce unnecessary health care expenditures (44, 45)

A Cochrane systematic review in 2007 looked at randomized controlled trials (RCTs) evaluating the effect of AD on the practice of health care professionals and on health care outcomes (75). Studies were grouped into four categories: (1) trials evaluating multifaceted interventions where AD was one of the components of the intervention, compared to control groups receiving no intervention or printed educational materials only; (2) evaluations of AD alone compared to no intervention; (3) evaluations of multifaceted interventions where AD was one component of the intervention compared to another intervention, such as audit and feedback

or reminders; and (4) evaluations comparing different types of AD such as individual AD versus group AD, AD by physician versus AD by non-physician, AD plus telephone support versus AD alone. Overall, authors of the systematic review found that AD, with or without the addition of other interventions, can be effective at improving the practice of health care professionals but the effect is variable. The health care professionals evaluated in this review included primary care physicians, or teams practising in community settings, pharmacists, counter attendants, nurses, nursing assistants, residents, interns, dentists, and other health care workers responsible for patient care (75). The clinical behaviours evaluated included medication prescribing behaviour, general management of a variety of problems encountered in general practice, and delivery of preventive services including counselling for smoking cessation. This heterogeneity in subjects studied and outcomes evaluated may have contributed to the variability of results reported in this review. It was not possible to isolate from this review the results of studies evaluating the effect of AD only on drug prescription by FPs; therefore, the effectiveness of AD in this specific context, remains unclear.

Another systematic review by Grimshaw et al. (74) evaluated various guideline dissemination and implementation strategies, including the use of AD as part of multifaceted educational interventions. They found that multifaceted interventions that included AD as one of the components showed better post intervention outcomes. This review does not provide evidence about the effectiveness of AD as a stand-alone intervention. Furthermore, this systematic review did not focus specifically on FPs and evaluated AD delivered to a variety of health care professionals such as physicians, nurses, nurse practitioners, pharmacists, dieticians, physician's assistants and office staff.

Despite generally positive results identified in previous systematic reviews, the effectiveness of AD as a stand-alone intervention to optimize the drug prescribing behaviour of

FPs in primary care remains unclear. Neither systematic review cited focused on the use of AD in this context and results across individual studies varied considerably. Focusing specifically on the prescribing behaviour of FPs is particularly important because they are the main prescribers of medications. In Canada, FPs prescribe drugs at approximately one in two office visits and are responsible for the majority of the prescriptions dispensed annually (76). Given the rising health care costs, with drugs (both prescription and non-prescription) being the second major contributor to healthcare spending (77, 78), ensuring evidence based prescribing patterns is very important so that health care dollars are spent efficiently and the patients receive the medications they need.

AD aims to improve quality of care by providing up-to-date evidence based information to physicians. FPs are the main recipients of AD programs in Canada and elsewhere. Despite the increasing use of AD to improve quality of care and optimize prescribing, the effectiveness of AD in the specific context of influencing medication prescription by FPs is unclear; synthesis of evidence to describe the magnitude of the effect on FP behaviour is lacking. Knowledge about effectiveness of AD would be of interest to health policy planners and medical educators developing AD programs, as well as to professional bodies looking at effective ways to disseminate and implement clinical guidelines.

To provide a more focused evaluation of the effectiveness of AD as a single strategy among select groups of professionals, this systematic review aims to synthesise current knowledge about the effectiveness of AD as a single intervention at modifying drug prescription behaviour of FPs in primary care settings.

## **2.2 Methods**

**Literature Search Strategy:** A search of the MEDLINE, EMBASE, CENTRAL, and Web of Science databases (January 1983 – July 2010) was conducted to identify randomised controlled



trials (RCTs) and observational studies evaluating the use of AD to influence drug prescription behaviour of FPs in primary care settings. We used terms that mapped to Medical Subject Headings (MeSH) in combination with keyword terms for concepts that did not map. A hand-search of bibliographies of articles retrieved from the electronic search to identify additional studies was also conducted. Data from unpublished sources, review articles, case reports, abstracts, and letters were not included. Table 1 (page 82) provides the list of concepts, key words and medical subject headings (MeSH) used in the search strategy. A full MEDLINE search strategy is provided in the appendix A (page 104). All literature searches were supervised by a librarian with expertise in systematic reviews.

**Selection of Studies:** All titles and abstracts identified by the search strategy were reviewed and potentially relevant studies were retained for full manuscript review to determine their eligibility (Figure 1, page 96). Criteria for inclusion were: 1) RCT or observational study design with a control group; 2) Studies of AD delivered to FPs; 3) AD as the sole intervention/exposure; 4) Drug prescription as the target behaviour of AD (Table 2, page 83). All studies which fulfilled selection criteria were included and were reviewed independently by two reviewers (HC and VB) for quality assessment and data abstraction. Disagreements were resolved by consensus. In cases where consensus was not reached, a third reviewer (DL) was consulted.

**Quality Assessment of Studies:** Independent quality assessment was performed using standardized quality assessment forms developed for the purpose of our study. For RCTs, the form was adapted from CONSORT (Consolidated Standards of Reporting Trials) statement and EPOC (Cochrane Effective Practice and Organisation of Care group) guidelines. For observational studies, the quality assessment form was adapted from the STROBE

(Strengthening the Reporting of Observational studies in Epidemiology) guidelines and Newcastle Ottawa Scale for assessing the quality of non –randomised studies. In general, for both types of study designs, studies were assessed for quality of reporting and how the study was conducted, using the scoring criteria of: 0 = not done or not reported, 1 = partially done or reported, 2 = well done and clearly reported. A copy of each quality assessment form is attached in the appendix A (page104).

**Data Extraction:** Descriptive information extracted from each study included: 1) year of publication; 2) country where study was conducted; 3) study design and objectives ; 4) FP population and sample size, 5) source and period of prescription data collection (e.g., administrative health database including electronic pharmacy records, survey data); 6) information about the AD visits including type of AD visit, number of visits, where the visit was provided and whether the visit followed the principles of AD; 6) control group, including who constituted the control group and whether they received any intervention; 7) profession and training of academic detailer; 8) target drugs for intervention, 9) assessment of study outcomes, 10) length of study follow-up; and 11) effect of the intervention as reported in the study.

### **Outcome Measurement**

**Primary Outcome:** To evaluate the magnitude of the effect of AD on prescription behaviour, the difference in relative change between the intervention and control groups was used. Relative change was chosen as the primary outcome, rather than absolute change, to allow the comparison of outcomes across studies which evaluated prescribing patterns for different drugs, and therefore had different baseline prescription rate values, or across studies that used different outcome measures to evaluate prescription rate (Table 3, page 84).

Relative change in prescription rate, expressed as a percentage, was calculated by dividing the difference in prescription rate before and after the intervention by the baseline value (before the intervention), and multiplying by 100. The difference in relative change was calculated by subtracting the relative change in the control group from the relative change in the AD group.

Secondary Outcomes: The difference in absolute change between the intervention and control group was also calculated. The absolute change was calculated in each group by subtracting the baseline prescription rate from the prescription rate after the intervention.

Relative or absolute changes with a positive sign imply that the prescription rate increased following the intervention; whereas relative and absolute changes with a negative sign imply that the prescription rates decreased over time.

Standardised mean difference (SMD) was calculated as a measure of effect size for the studies that had adequate data for such calculations. SMD was defined as the difference between group means for the outcome measure divided by the standard deviation of the outcome measure for the study population (79). A Poisson distribution was assumed in the studies where data were not normally distributed or where outcome was measured as the number of events. In studies where data were normally distributed and confidence intervals or Z-values were provided, we used the available p values, Z- values or confidence intervals to calculate the standard deviations for the computation of SMD. An effect size with a negative sign was a desirable effect in a study trying to decrease the prescription rate but was an undesirable effect in a study trying to increase the prescription rate.

The original intent was to conduct a meta-analysis using effect sizes; however, this was not possible due to heterogeneity among studies, which did not allow the calculation of effect

size in a uniform way, as described in the results. A qualitative description of the studies is provided.

## **2.3 Results**

### **Literature Search Results**

Results of the literature search strategy are described in the flow diagram (Figure 1, page 96). The electronic search strategy resulted in 6,166 potential studies, of which 5895 were excluded due to lack of relevance based on title review alone and identification and removal of 151 duplicates. After reviewing the abstracts of the remaining 120 studies, 15 studies were excluded for the following reasons: repeated publications from the same study; editorial articles; meeting abstracts; and special reports. Fifty-two and 6 studies, respectively, were excluded because the target behaviour or the intervention did not meet inclusion criteria. Nineteen studies were deleted because the intervention was multifaceted and 1 was removed because the intervention was directed at patients rather than FPs. Twenty-seven abstracts were retained for full article review. After the full review, 12 studies were excluded because the intervention targeted pharmacists, no information on results or methods was provided, or the study design was an observational study without a control group. The exclusions resulted in 11 RCTs and 4 observational studies being included in the current review (61-63, 70, 80-90)

### **Description of Studies**

Randomized controlled trials (RCTs): The RCTs were generally of high quality, with quality assessment scores varying from 38 to 51 out of maximum possible score of 53 (median = 48). Five of the 11 RCTS described results showing effectiveness, i.e. achieving a change in the direction recommended by the AD intervention. Two of the 11 RCTs reported having a positive

effect on some but not all of the target drugs, while 4 of the 11 RCTs reported obtaining no effect from the AD intervention (Tables 4 and 6, pages 83-84,86-87).

Of the 11 RCTs, two evaluated AD aimed at increasing prescription of the target medication (26). Neither study reported a statistically significant effect for the intervention (83, 88). Five RCTs were aimed at decreasing medication prescription. Of these, two showed a statistically significant effect (61, 70), and one showed a statistically significant effect for at least one of the medications studied (87). Four studies evaluated AD aimed at increasing the prescription of some medications while decreasing others. Of these, two showed statistically significant effects (84, 91) and one showed a statistically significant effect for some of the medications (82).

The AD interventions studied in the RCTs targeted a number of different medications, including benzodiazepines (BDZ) (80, 81, 87), non-steroidal anti-inflammatory drugs (NSAIDs) (61, 85), antibiotics (82), inhaled corticosteroids and beta agonists (86), anticholinergic antidepressants (92), diuretics and beta blockers (88), propoxyphene, cerebral and peripheral vasodilators, cephalixin, and (70) proton pump inhibitors (83).

Avorn et al. conducted a RCT to assess the effectiveness of AD at decreasing the use of three drug groups: cerebral and peripheral vasodilators, an oral cephalosporin (Cephalexin) and propoxyphene (70). They compared the mean number of drug units prescribed per physician over a one year period before and after the intervention in three groups: those receiving AD, those receiving no intervention, and those receiving printed materials only. For this systematic review, we only included results from the control group receiving no intervention. In this study, AD was effective at reducing all three target drug types, with physicians in the AD group prescribing fewer drug units than physicians in the control group by a mean of 782 units for all

three drugs combined ( $p < 0.0001$ ). We calculated a difference of -14% in relative change between the AD and no intervention group. An effect size of -7.8 was calculated assuming a Poisson distribution and using post intervention values of the outcome measure.

De Burgh et al. evaluated the effect of AD on reducing BDZ prescriptions for insomnia and anxiety (80) by comparing the rate of BDZ prescriptions per 100 patient encounters with diagnoses of either anxiety or insomnia in the AD and control groups. The overall rate of BDZ prescriptions was reduced by 23.7% between the pre and post- intervention surveys (matched pairs t-test,  $p < 0.001$ ) in the entire study sample, but no statistically significant differences were found between the two groups (two sample t-test,  $p = 0.2$ ) in overall BDZ prescription rates or in prescription of BDZ for either anxiety or insomnia. We calculated a difference in relative change of -7% and -3%, respectively, for anxiety and insomnia. Data were not available to calculate effect sizes.

In a similar study conducted 5 years later in the same study area, Zwar et al.(81) evaluated the effectiveness of AD to decrease repeat prescriptions of BDZ. They measured BDZ prescriptions per 100 patient encounters, for all indications, for sleep problems and for anxiety in the AD group and in a control group receiving AD on an unrelated topic. There was a statistically significant decrease in BDZ prescription rates post intervention in both groups for all indications [ANOVA comparing surveys pre AD to 6 months post AD,  $F(1, 6) = 6.60$ ,  $p = 0.042$ ]. No statistically significant differences were detected between the two groups in the prescription rates for sleep problems [ANOVA contrast pre AD to 6 months post AD,  $F(1, 6) = 0.49$ ,  $p = 0.51$ . ANOVA contrast pre AD to 12 months post AD,  $F(1, 6) = 0.007$ ,  $p = 0.94$ ] or anxiety [ANOVA contrast pre AD to 6 months post AD,  $F(1, 6) = 0.49$ ,  $p = 0.51$ . ANOVA contrast pre AD to 12 months post AD,  $F(1, 6) = 0.28$ ,  $p = 0.61$ ]. We calculated a difference in relative change between AD and control groups of +10%, -2% and -22% for BDZ prescriptions

for all indications, sleep problems and anxiety, respectively. Using the change in prescription rates from baseline to three months post intervention, effect sizes were calculated at +0.42, -0.08 and -0.529, respectively, for BDZ prescriptions for all indications, sleep problems, and anxiety.

Hett et al. (82) evaluated AD for modifying antibiotic prescriptions for upper and lower respiratory tract infections, otitis media, and urinary infections. They compared the total number of prescriptions per FP in the AD and control groups over a three month period pre and post intervention. Overall, antibiotic prescriptions increased significantly in the three month period post intervention. In the AD group, there was a significant increase in prescription of two of the recommended drugs, doxycycline and amoxicillin 250 mg, from a median of 1 to 6 prescriptions per FP ( $p = 0.001$ ), and 3 to 6 ( $p = 0.03$ ), respectively. There was an increase from a median of 1 to 2, and 4.5 to 7.5, respectively, in the control groups. There was also a significant increase in prescriptions of one of the two non-recommended drugs, Cefaclor, in the control group from a median of 5.5 to 10 prescriptions per FP ( $p = 0.03$ ), compared to an increase of 5.5 to 7.5 in the AD group. We calculated a difference in relative change of +59% and -74%, respectively, for the eight recommended and two non-recommended antibiotics. A combined effect size of -0.51 and +2.02 respectively, for recommended and non-recommended antibiotics, was calculated using post intervention values of the outcome measure and assuming a Poisson distribution.

Ray et al. (61) evaluated the effectiveness of AD at decreasing the use of NSAIDs in elderly patients for the management of osteoarthritis. NSAID use, defined as the mean number of days of prescribed NSAIDs dispensed per NSAID user over a one year period before and after the intervention, decreased by 68 days for patients of physicians in the intervention group, compared to 47 days for patients of physicians in the control group. The estimated intervention effect was an absolute reduction of 21.3 days (95% CI, 10.2 to 32.4) and a relative reduction of



7% (95% CI, 3% to 11%) in NSAID prescriptions. Using the change from baseline for AD and control groups we calculated an effect size of -3.76 assuming a normal distribution.

Hall et al. (83) evaluated the effectiveness of AD for increasing the use of omeprazole and metronidazole for the management of *H. pylori*. The prescription rate was measured as mean dose units prescribed, per quarter, per practice, per patient, adjusted for practice size to achieve mean prescribing dose unit per patient for each medication. Prescription rates were compared over a one year period before and after the intervention using multilevel modelling techniques to take into account the repeated measures. There was a non-significant change in prescribing attributable to the intervention of -0.02 (95% CI: -0.12; +0.08) for Omeprazole and -0.005 (95% CI: -0.025; 0.015) for Metronidazole. We calculated a difference in relative change of -9% and -5%, respectively, for omeprazole and metronidazole. Effect sizes of -0.4 and -0.5 were calculated for omeprazole and metronidazole respectively, using the main analysis effect of intervention and the confidence interval provided.

Van Eijk et al. (92) conducted a RCT to evaluate the effectiveness of AD at reducing the prescription of highly anticholinergic antidepressants for elderly people. They measured the incidence rate of prescriptions of highly anticholinergic or less anticholinergic antidepressants per 1000 person years in people aged 60 or more years. Intent to treat analysis revealed a reduction in the rate of highly anticholinergic antidepressants in elderly people of 26% (95% CI: -4 to 48%) in the individual AD arm and of 45% (95% CI: 8 to 67%) in the group AD arm, compared with controls. The use of less anticholinergic antidepressants increased by 40% (95% CI: 6 to 83%) in the individual AD and by 29% (95% CI: -7 to 79%) in the group AD, compared to controls. We calculated a difference in relative change of -47% and +68%, respectively, for highly anticholinergic and less anticholinergic antidepressants, for individual

AD and -59% and +39%, respectively, for group AD. Data were not available to calculate an effect size.

Bernal-Delgado et al. (85) evaluated the effect of AD on increasing prescription of first line NSAIDs: Diclofenac and Piroxicam, while decreasing the prescription of second line NSAIDs: Aceclofenac, Meloxicam, and Tenoxicam for osteoarthritis. The change in prescription behaviour was measured as proportional change in number of prescriptions prescribed per general practitioner per month during the six months before and after intervention. Differences between the AD and control groups were observed in the reduction in use of non-recommended drugs. Decreases of 25.5% in Meloxicam prescription, and of 22.6% in Tenoxicam, were observed in the AD group compared with reductions of 1.2% and 14.4%, respectively, in the control group. We calculated a difference in relative change of +7.49% and +9.71% for the two recommended NSAIDs, and of -6.49%, -24.31% and -37.03% for the three non-recommended drugs respectively. Effect sizes for the relative reduction in number of prescriptions of medication prescribed were calculated at 1.97 and 2.01 for the two recommended drugs and -1.28, -2.63 and -8.25 for the three non-recommended drugs, respectively: we used the confidence interval of the relative reduction for calculating the standard deviation.

Witt et al. (86) performed a cluster RCT to examine the effect of AD on increasing prescription of inhaled steroids and decreasing inhaled beta-2-agonists in children, according to clinical guidelines for asthma. The control group received the guidelines by mail and a report of their prescription profile of asthma medication. Daily defined doses (DDD) of steroids or beta-agonists, per child per practice, were measured over 2 years prior to and one year after the intervention. No significant short term ( $p = 0.10$ ) or long term effect ( $p = 0.72$ ) of the intervention was detected for either medication. We calculated a difference in relative change of

+7% for steroids and -2% for beta-agonists. We computed effect sizes of -0.09 and +0.18, respectively using the p-value provided in the study to calculate the pooled standard deviation. The difference in sign between both results is due to the fact that effect size was calculated using post intervention values only.

Midlov et al. (87) conducted a RCT to evaluate the effect of AD on decreasing the prescription of BDZ and antipsychotic drugs in the elderly. They measured DDD dispensed over three month periods for one year after the intervention, and calculated the percent difference in the geometric mean at one year compared to baseline for the AD minus control groups. There was a statistically significant decrease in prescription of medium and long acting BDZs (26.63%, 95% CI -46.15 to -0.03,  $p < 0.05$ ) and total BDZs (25.8%, 95% CI -44.20 to -1.32,  $p < 0.05$ ). No statistically significant difference was observed for antipsychotic drugs. Effect sizes could not be calculated.

Simon et al. (88) conducted a cluster RCT comparing interventions using group and individual AD with a control group receiving printed guidelines by mail. They intended to increase physicians' use of diuretics and beta blockers among patients with hypertension and to improve adherence with hypertension guidelines. The percentage of patients receiving a diuretic or beta-blocker in the first year after the intervention, increased by 13% in the group AD practices, 12.5% in the individual detailing practices and 6.2% in the control practices. Two years following the intervention, a persistent effect of individual AD was seen, although it was not statistically significant (OR, 1.22; 95% CI, 0.92 – 1.62) but there was no longer any effect for group detailing (OR, 1.06; 95% CI, 0.80 – 1.39). We calculated a difference in relative change of +10.9% between the individual AD and control group, and a difference of +14.7% between the group AD and control group.

Observational studies: There were 4 observational studies included in this systematic review and all of the studies evaluated AD aimed at decreasing prescription of a target drug(62, 63, 89, 90) . Of these, 3 demonstrated a significant positive effect of AD ref(62, 63, 90), while one did not ref(89). The AD interventions in the observational studies targeted a number of different medications, including NSAIDs, Paracetamol (PCM) (63)ref, adrenoceptor agonists and glucocorticoids (90) {and cyclo-oxygenase-2 inhibitors (COX-2) (62) (Table5, page 93) . Quality assessment scores for observation studies varied from 36 to 44 out of a possible maximum score of 47, (median score = 41.5).

Atkin et al. (89) studied whether AD reduced the number of concurrent medications taken by elderly patients. When the mean number of medications prescribed concurrently per patient were compared, no statistically significant differences were found between control and intervention groups at any data collection point ( $p = 0.19$ ). There was; however, a significant reduction in prescribing by doctors for both groups collectively over the 12 month period ( $p < 0.02$ ), perhaps due to a co-intervention, the introduction of copayment as a new health policy over the same period. We calculated a difference in relative change of -9% and an effect size of -0.81 using the post intervention values of the outcome measure and the confidence interval provided.

Peterson et al (63) examined the effectiveness of AD to encourage the use of Paracetamol (PCM) as first line treatment instead of NSAIDs for rheumatic diseases in the elderly. Changes in prescribing of NSAIDs relative to PCM, in daily defined doses, were evaluated. A reduction was observed in both control and intervention regions over the course of the study (control;  $Z = 7.78$ ,  $p < 0.0001$  and intervention;  $14.42$ ,  $p < 0.0001$ ), with a significantly greater reduction within the intervention than the control region ( $Z = 5.22$ ,  $p < 0.0001$ ). We calculated a difference in relative change of -6%. An effect size of -5.24 was calculated using the post

intervention values of ratio of NSAID/Paracetamol and using the Z-value provided in the study for calculation of standard deviation.

Tomson et al. (90) assessed the effects of AD on increasing the use of inhaled steroids and reducing inhaled beta agonists for asthma. The ratio of prescribed daily defined doses of inhaled beta agonists to inhaled steroids decreased significantly from before to after the intervention in the AD area ( $p = 0.001$ ) while there was no significant change in the control area ( $p = 0.1$ ). Unfortunately, the difference between the two areas in the decrease in ratios was not statistically significant ( $p$  value not provided). The lack of statistical significance may have resulted from the small number of participating health centers in the control area ( $n = 26$ ). The difference in relative change and an effect size could not be calculated.

Using a retrospective cohort study design, Graham et al. (62) evaluated the effect of AD on reducing the prescription of selective cyclooxygenase-2 inhibitors (COX-2) anti-inflammatory medications in patients with osteoarthritis. The rate of COX-2 prescriptions per elderly patient in each FP practice was measured in daily defined doses (DDD) per patient. A significant decrease in COX-2 prescriptions was observed in the AD area (within group difference  $Z = -2.34$ ;  $p = 0.019$ ), but not in the control area ( $Z = -0.22$ ,  $p = 0.827$ ). The decrease in COX-2 prescriptions over the first 3 months post intervention was greater in the AD group than in the control group (between group difference of 0.76 DDD per patient; 95% CI: 0.037; 1.48;  $Z = 2.06$ ;  $p = 0.04$ ). No significant sustained effect was observed over the entire post intervention period ( $Z = 0.85$ ;  $p = 0.398$ ). We calculated a difference in relative change of -23%. An effect size of -0.09 was calculated using the change from baseline at three months post intervention and the confidence interval provided.

## 2.4 Discussion

In our systematic review, we synthesized current knowledge about the effectiveness of AD as a single intervention to optimize the prescription behaviour of FPs. To our knowledge, this is the first systematic review specifically examining the effectiveness of AD in this clinical context. We found that AD can be a useful technique to promote incorporation of research findings or clinical guidelines into practice. This systematic review confirmed the effectiveness of AD, with 60% of the studies reviewed showing a statistically significant change in the prescription behaviour of FPs, in the direction recommended in the AD session.

We also attempted to evaluate the magnitude of the effect of AD. Effectiveness, as measured by differences in relative change from baseline between AD and control groups, varied widely across studies. Because lack of relevant data prohibited measures of variability associated with the difference in relative change being calculated, it was not possible for us to combine these results and calculate a pooled estimate of the difference in relative change from the individual studies. The median difference in relative change calculated was 21% (interquartile range 43.75%) for RCTs, and 9% (interquartile range 8.5%) for observational studies (Table 4, page 85-86).

Data were only available to calculate effect sizes in 7 of the 11 RCTs and 3 of the 4 observational studies. We responded to limited and varying types of data available in the original articles by using different methods for calculation of effect size. The heterogeneity involved in calculating effect sizes made it impossible to perform a meta-analysis and pool the effect size results across the studies. It also limited our ability to compare individual effect sizes across studies. The median effect size calculated was 0.09 (interquartile range 2.73%) (Table 4, page 85-86), representing meaningful effect sizes. Using Cohen's criteria for effect sizes (79) in the seven studies evaluating eleven medications where effect sizes were calculated and were

positive (i.e. in the direction of the recommended change), eight effect sizes were large, one was medium, and two were small.

There are limitations to the interpretation of effect sizes we calculated. Cohen's rule is a general rule of thumb which is used in the event of unavailability of specific criteria for clinical relevance in the research results (79, 93). We also used a Poisson assumption to calculate effect size, when data were not normally distributed, which can lead to overestimation, especially when large effect sizes are found. We recognize that studies incorporating change from baseline are susceptible to overestimation or underestimation of effect (94); small effects on inappropriate prescribing may be clinically important when they affect a large number of patients or a clinically important health outcome (95). Finally it was difficult for us to compare effect sizes based on normal and non-normal distributions (96).

Our results are consistent with other systematic reviews that evaluated the effectiveness of AD in different clinical contexts; however, those systematic reviews used different measures to assess the effect of AD interventions. In the Cochrane systematic review, for studies where the health care outcome was measured as a dichotomous variable representing compliance (yes/no) with the desired behaviour, effect was measured as the improvement in the between-group differences in compliance with the desired behaviour (75). This was calculated as the difference in compliance between intervention and control groups post intervention minus pre intervention. For continuous outcomes, the relative percentage change attributable to the intervention was measured and is described as the adjusted difference between post intervention AD and control group means divided by post intervention control group mean, multiplied by 100 to express as a percentage. For RCTs comparing AD alone to no intervention, improvement in compliance was greater in the intervention group, with a median difference of 5.0% (inter-quartile range 3.2%) between the two groups for studies with dichotomous outcomes. In studies

where the health care outcome was a continuous variable, a median relative percentage change attributable to the intervention of 23 % (inter-quartile range 27%) was observed. The effect specifically on prescribing behaviour was only reported for studies looking at multifaceted interventions with AD as one of the components. The authors found that the improvement in compliance with desired prescription behaviour was superior in the intervention group with a median of 4.8% (inter-quartile range 3.5%).

In the systematic review by Grimshaw ref (74) multifaceted interventions where AD was one of the components were evaluated. For studies measuring the process of care using a dichotomous outcome measure, the performance of care (measured as the proportion of people who received appropriate treatment) post intervention was better in the intervention group, with a median absolute difference between intervention and control group of 6% (minimum to maximum -4.0 to +17.4 %) for RCTs and 7.3 % for observational studies (minimum to maximum -5.6 to 16.4 %). For studies measuring the process of care using a continuous outcome variable, the median relative difference between groups in post intervention performance was 15% (minimum to maximum 1.7% to 24%) for RCTs and 11.3% for the single observational study. The standardised mean differences for studies measuring the continuous process of care was not calculated by authors due to insufficient data. They were not able to conduct a meta-analysis due to the large number of different combinations of multifaceted interventions and extreme heterogeneity.

Although direct comparison of our results with those of previous systematic reviews is not possible due to differences in the interventions compared and in the outcomes used to measure effectiveness, results are nonetheless consistent in confirming effectiveness of using AD for health care practitioners with effects of at least moderate magnitude.



To evaluate the magnitude of the effect of the AD interventions, we chose to calculate and report between-group differences in relative change from baseline as the primary outcome for this systematic review, and between-group differences in absolute change from baseline and effect size (standardised mean difference) as secondary outcomes. This differs slightly from the outcomes chosen in the previous systematic reviews we described. The rationale for calculating changes from baseline, rather than comparing uniquely the post intervention rates in both groups, was that, despite randomization, baseline rates of prescriptions differed between groups in many of the studies. The rationale for selecting relative change, rather than absolute change as the primary outcome, was due to the heterogeneity in the outcome measures of the individual studies, which prevented meaningful comparison of absolute rates across studies. Calculation of effect size is preferable in this circumstance; however available data only allowed calculation in 10 of the 15 studies and the results could not be pooled in a meta-analysis because of heterogeneity in the data available for calculating effect sizes. Nonetheless, our choice of primary outcome has, however, some disadvantages. Expressing effects as relative changes can be difficult to interpret, or even misleading, especially when baseline rates are small. In such situations, small absolute changes can lead to large relative changes. Conversely, when baseline rates are fairly large, clinically meaningful absolute changes can appear as small relative changes. Therefore, we suggest relative changes need to be interpreted in the context of the actual baseline rates. For this reason, the pre and post intervention rates and the between group differences in both absolute and relative changes are presented (Table 6, page 88-89). Furthermore, it is statistically more challenging to demonstrate effectiveness when comparing changes from baseline between two groups, than when comparing differences in post intervention rates (94) . We may have underestimated or overestimated the effect of AD reported in terms of difference in relative change in this systematic review.

Our systematic review supports AD as a method for optimizing prescribing behaviour in a wide variety of contexts. Specifically, AD has been effective in reducing or increasing prescription of medications in response to recommendations. The most frequent rationale for the recommended prescription change was to reduce the risk of side-effects (66.67% of the studies), followed by improving cost-effectiveness (20% of the studies). Less frequently, AD was used to promote implementation of clinical guidelines (13%). The rationale for the intended prescription change advocated in the AD intervention did not appear to influence the results of the studies, although a number of studies did not allow for this to be evaluated formally with regression analyses.

Our systematic review provides an overview of the different clinical contexts in which AD has been used to optimize prescription of medications by FPs. We have synthesized current evidence about its effectiveness and the magnitude of the effect. This information is of interest to health policy planners involved in or considering the implementation of AD programs, to medical educators and health care professionals designing AD interventions, as well as to researchers, professional bodies and other organizations looking for effective ways to disseminate research evidence or to incorporate clinical guidelines. Results of our systematic review support the increased use of AD programs seen over the last decade in Canada and elsewhere, aimed specifically at FPs. Such programs offer a practical alternative for staying up to date with rapidly evolving new research evidence. They provide physicians with evidence based non-biased information about incorporating research evidence in their practice based on a synthesis of the current literature.

In conclusion, AD has been used, as a single intervention to influence the prescription of medications by FPs. This systematic review demonstrates that AD can be effective at optimizing prescription of medications by FPs, and that, although variable, the magnitude of the effect was

modest in the majority of studies. This systematic review supports the view that AD can be a useful technique to promote evidence based prescription of medications or incorporation of clinical guidelines into clinical practice (44)

## Chapter 3: Survey

This chapter provides a description of the study design for the objective 2 of the thesis and methods, results and discussion for surveys only.

**Study Design:** A mixed-methods approach was used to address objective 2 of the thesis: to understand FPs' perceptions of AD as a way of receiving information about RA management and as a way of optimizing RA care. This approach incorporated elements of qualitative and quantitative approaches to understand the perceptions of FPs towards AD on the topic of RA management. Because the advocates of mixed-methods research have argued that the complexity of human phenomena mandates more complex research designs to capture them, a mixed-methods approach was considered for the research questions (97). The approach has been increasingly used by researchers to expand the scope and deepen insights for their studies (97). Qualitative descriptive research is designed to explore novel areas of interest and produce themes that summarize the central perceptions of the participants (40). Using AD for FPs for treatment RA is relatively novel area, which has not been studied before. The core method for this study is quantitative which provides overall information on a larger sample while the qualitative data provides more in-depth information from selected individuals to supplement the quantitative data (98). The quantitative aspect of the study consisted of a brief survey administered to all FPs participating in AD while the qualitative component consisted of semi-structured interviews with the FPs.

This mixed-method study is nested in a bigger project, which is using AD to inform FPs about the most recent changes in the treatment and management of RA. The messages delivered during the AD visit outline the salient points of current RA treatment guidelines and the rationale

for the changes in the recommendations (1, 22). These messages were developed with input from FPs, via nominal group meetings, patients with RA, rheumatologists, and knowledge translation experts. In addition, a resource kit was developed that provided practical tools to support FPs in implementing the RA treatment recommendations. The content of the resource kit was specifically designed to address barriers to care or enhance facilitators identified in prior research (45). Semi-structured interviews had been conducted, with a random sample of FPs, to investigate baseline knowledge, motivations for current prescribing patterns (45) and potential barriers and facilitators to prescribing DMARDs and optimal care for RA. A pharmacist was appointed as the academic detailer and was trained in the medical management of RA and in skills specific to AD, including social marketing, communication skills, establishing trust and credibility, developing objectives and key messages, using detailing aids, dealing with challenging responses and closing the session. A pharmacist was chosen as the academic detailer because AD by a pharmacist has been used successfully in BC as part of a provincial academic detailing program; pharmacists were also reviewed as having relevant expertise to discuss the use of medications in the management of RA, which was the focus of the AD messages. The process of AD followed the well-established principles of AD by Soumerai (44).

## **Study Sample**

The AD intervention was targeted at all FPs practicing family medicine in the intervention health area (including Burnaby, North Vancouver, Coquitlam, and Port Coquitlam) for the study. FPs were identified using the BC College of Physicians' list of all licensed FPs. Physicians were excluded if they were retired, had specialized practices (e.g. emergency, sport or addiction medicine), or were solely in administrative roles. All FPs listed with the College were invited to participate in the AD study.

## **Survey Methods**

### **3.1 Recruitment**

Two weeks after each AD visit, a brief survey was sent by fax to all FPs who participated in the AD visits. Non-responders were sent another survey two weeks later.

### **3.2 Data Collection**

Survey data included demographic information specifically gender, age, number of RA patients in practice, work setting (solo, walk-in, group practice), full-time or part-time practice, university affiliation and previous AD experience

The survey was designed for the purpose of this study, in consultation with the primary research supervisor. The self-administered questionnaire asked FPs to rate the utility of: a) the academic detailing visit; and b) the resource kit; and c) to compare AD to other CME for its educational value and convenience. FPs were also asked if they thought they would change their clinical practice in the care of RA patients as a result of the AD visit and participate again in AD. For most of the survey items (items 1 to 5 and 8 to 13) a categorical/interval scale was provided with values from 1 to 10. Two survey items (items 6, 7) was designed to be answered on a ordinal scale with values ranging from 0 to 3. Finally, in an open-ended question, FPs were asked to provide any further comments about the utility of using an AD approach to deliver information about RA management (see attached survey in appendix B, page 116).

### **3.3 Analysis**

The response rate to the survey was calculated as the number of completed surveys received divided by the number of FP who participated in the AD visits. Demographic information and

the responses to the survey questions were analysed using descriptive statistics (mean, median and mode). Mean and standard deviation were calculated for the normally distributed survey responses (items 1 to 4 and 11, 12), median and inter-quartile range for survey responses not normally distributed (items 5, 8 to 10 and 13) and mode for survey responses measured on categorical/ordinal response scale (items 6, 7). Survey items 1,2,3 were measured on a 10 Point scale, 1= Not at all useful, 10= Extremely Useful; Item 4 on a 10 Point scale, 1= Not at all valuable, 10= Extremely Valuable; Item 5 on a 10 Point scale, 1= Not at all convenient, 10= Extremely Convenient; Item 6 on a 4 point scale, 0= No, not at all, 3 = Yes, a lot; Item 7 on a 4 point scale, 0 = The information was not relevant to my practice, 1 = I don't agree with the recommendations presented, 2 = The information confirmed what I already do, 3= Others; Item 8 on a 10 Point scale, 1 = Much less confident, 10 = Much more confident; Item 9 on 10 Point scale, 1 = Not at all knowledgeable, 10 = Extremely Knowledgeable; Item 10, 11, 12 on a 10 Point scale, 1 = Not at all, 10 = Very much so; Item 13 on a 10 Point scale, 1 = Not at all likely, 10 = Extremely Likely.

Survey responses were examined for any differences based on following three factors: whether they had a university affiliation; number of RA patients in practice (categorised as : <10, 10-20, 20-30, >30); whether FPs had previous AD experience or were receiving their first AD visit.

### **3.4 Results**

Of the 28 FPs who received an AD visit, 23 completed the survey (response rate 82%). Thirty nine percent of the respondents were males and 65% reported previous AD experience. Half of the participating FPs had at least 10 – 20 RA patients in their practice. The characteristics of the participating FPs are shown in Table 7 (page 90).

The survey responses evaluating FP's perceptions of the AD visit are provided in Table 8

(page 91). For survey items that evaluated the usefulness of the discussion (item 1), written material used in the presentation (item 2) and the resource kit (item 3), most FPs rated them highly [mean(SD) ratings ranging from 8.2 (1.1) to 8.3 (1.0) on a 10 point scale where '1' is 'Not at all useful' and '10' is 'Extremely useful']. Survey items evaluating the AD visit, as compared to other CME methods, in terms of educational value (item 4) and convenience (item 5), were rated as highly valuable [mean rating 8.2 (1.3) on a 10 point scale ranging from 'Not at all valuable' to 'Extremely valuable'] and very convenient [median (IQR) 9.0, (1.5) on a 10 point scale ranging from 'not at all convenient' to 'extremely convenient']. Forty-eight percent of the FPs rated the AD visit as being extremely convenient as compared to other CME activities and there were no ratings below 7 on the 10 point scale.

When asked if they would change their clinical practice for, managing RA patients; as a result of the AD visit (item 6), 56.5 % of the participating FPs answered 'Yes, a fair bit'. Thirteen percent of the FPs expected no change in their clinical practice, of these, all stated it was because the information confirmed the appropriateness of their current care practice for RA management (item 7),

FPs also generally reported the AD visit improved their confidence at treating RA [Item 8, Median (IQR) 8(1) on a 10 point scale, where '1' is 'Much Less confident' and '10' is 'Much More confident']. Fifty- two percent FPs rated their confidence 8 or higher on the 10 point scale. When evaluating the satisfaction of FPs with the health professional delivering the AD visit, FPs felt the pharmacist was very knowledgeable about the topic [Item 9, Median (IQR) 9 (2) on a 10 point scale where 1 is 'not at all knowledgeable' and 10 is 'extremely knowledgeable']. Furthermore, 35% found the academic detailer (pharmacist) to be 'Extremely knowledgeable' and 83% rated his knowledge at 8 or higher on the 10 point scale.



Survey items evaluating the AD visit in terms of meeting their expectation (item 10), providing new information (item 11) and relevance to their practice (item 12) were rated highly by most FPs [median (IQR) ratings 9.0 (2.7)] for meeting their expectations; and mean (SD) ratings of 6.8 (2.0) and 8.3 (1.7) for providing new information, and topic being relevant to their practice, respectively. Forty-eight percent of the FPs were ‘Very much likely’ to participate in AD again on another topic [item 13, Median (IQR) 9(1.5) on a 10 point scale].

To evaluate whether the favourable responses observed in our survey could be due to characteristics of our sample that could be associated with a more favourable response, we compared survey responses based on the following three factors: university affiliation; number of RA patients in practice (categorised as: <10, 10-20, 20-30, >30); and whether FPs had previously participated in AD (versus receiving AD for the first time) (Table 9 page 92). Although the study was not powered to evaluate differences in responses based on those factors, it was reassuring that there were no clinically meaningful differences between the groups, with all means and medians varying by one unit or less on a 10 point scale. (Table 9 page 92)

### **3.5 Discussion**

The purpose of this survey was to quantify FPs’ perceptions of AD as a method of receiving information about RA management. To our knowledge, this is the first study to explore FPs’ perceptions of AD specifically in RA. Overall, our results suggest that FPs value AD as a CME technique to update their knowledge in general and, more specifically, for RA.

We found that FPs appreciated the AD visit on RA for its educational value and for its convenience, when asked to compare with other CME methods. A large proportion (83% and 74%, respectively) rated the educational value and the convenience of AD at 8 or higher on a 10 point scale. Similar results were found by Allen et al (2007) in a study to understand FPs’ perceptions of AD and the factors affecting the use of AD by FPs’ (45). They asked FPs to rate

on a five-point likert scale how much various factors encouraged and discouraged the use of AD, and how likely they were to participate in AD in the future. They found that 69% of the FPs rated AD as being of higher or much higher value than other forms of CME.

In our study, the usefulness of the discussion with the academic detailer, written material presented and the resource kit were rated highly by the FPs [mean (SD) ratings ranging from 8.2 (1.1) to 8.3 (1.0)]. Similarly, Allen et al. found that the utility of handout material provided to FPs was one of the important factors encouraging use of AD (45). They reported that the mean ratings on a five point likert scale, for the usefulness of the handout material was 3.27 (1.3) and 4.30(0.8) for FPs with no previous AD experience and for those with previous AD experience, respectively.

In our study, FPs reported that the AD visit on RA, was relevant to their practice, met their expectations, and provided new information. The rating for new information [mean (SD) 6.8 (2.0)] had the lowest rating of the survey items. This finding is similar to the result from a study by Habraken et al. (2003), which evaluated the feasibility and acceptability of AD in general practice (64). They conducted individual and group AD visits to FPs and asked them to evaluate the course of the AD visit received and provide their opinions about receiving AD in the future. The lowest score documented was for the item ‘the visits brought me something new’(median of 3 and 4, on a 5 point scale where ‘1’ was ‘Not at all’ and ‘5’ was ‘Very much’, for individual and group AD, respectively). Overall, the study results revealed a favorable opinion of the AD visits (both group and individual visits) and most of the FPs indicated they were willing to participate in AD again in the future, which is also consistent with our study results.

We found that FPs appeared to be satisfied with having a pharmacist as the academic detailer, as reflected by their very high rating of how knowledgeable he was about the topic.

This result is in contrast to the findings in a study by Allen et al., where AD by non-physician was rated as a factor that discouraged participation in AD (45). In their study, CME by a non-physician received a mean (SD) rating of 2.11 (1.1) amongst first time AD users and of 3.33(1.0) amongst FP with previous AD experience, on a five point likert scale where '1' was 'strongly discourage' and '5' 'strongly encourage'.

We also found that the FPs' confidence to treat RA patients improved as a result of this AD visit; and FPs anticipated making practice changes in their management of RA, as a result of the AD visit. Whether the intervention lead to actual practice changes has not been evaluated. Nonetheless, these findings suggest that the AD visit has the potential to improve the care of RA, although this needs to be demonstrated in an effectiveness study.

The results of our study, and that of two other studies by Habraken et al. (2003) and by Allen et al.(2007) , indicate that FPs who participate in AD are very likely to be willing to participate again in AD (45, 64). This finding speaks to the acceptability of AD to FPs. In the study by Habraken et al. (2003), 90% of FPs were willing to receive AD again; and in the study by Allen et al. 93% of FPs who had prior AD experience. However, only 39% of those participating in AD for the first time, indicated they were likely to use AD in the future showing that AD is not universally accepted by all FPs

Overall, our results indicate that FPs had a favourable perception of AD for the topic of RA management. These results are consistent with previous studies exploring FPs' perceptions of AD in general practice and provide evidence that AD would be well accepted by physicians for RA. Our results also support the notion that AD may lead to practice changes, since FPs gained confidence in their management of RA and expected to change their clinical practice as a result of attending the AD visit. Whether these translate into actual practice changes will need to be determined in a study evaluating the effectiveness of the AD intervention. Nonetheless, our

findings provide support for the implementation of AD specifically for the topic of RA management which is a context where it has been used less frequently. AD may also be useful in initiatives to improve the management of other chronic diseases, or for improving implementation of clinical guidelines.

## **Chapter: 4 Qualitative Descriptive Component**

This chapter provides methods, results and discussion for the qualitative descriptive component of the study .

### **Methods**

#### **4.1 Recruitment**

To recruit FPs for the qualitative descriptive component of the study purposive sampling was used. All FPs who received the AD visit and completed the survey were invited to participate in the interviews in order to obtain a representative sample of all FPs who participated in AD. First contact with the FP was made once the completed survey was received. Invitation letters were sent either by email or by contacting the medical office by telephone or fax depending on the preferred mode of contact listed by the FP. We interviewed 12 FPs out of 23 who completed the survey.

#### **4.2 Data Collection**

We conducted one-on-one semi-structured telephone interviews to explore in-depth physicians' perceptions about the acceptability and utility of AD. Interview dates and time were scheduled based on FPs' convenience. Interviews were scheduled for 25-30 minutes. All interviews were conducted by one interviewer (HC).

Interview questions were designed to explore the in-depth perceptions of FPs about AD, as a way of receiving information on RA management. The interview guide is provided in the appendix C(page 118). Phone calls were taped by HC and transcribed

verbatim by a transcription service. They were reviewed for accuracy by the interviewer (HC). Interviews were conducted until no new codes emerged or data saturation was reached. Data saturation was achieved at 12 interviews when no new codes emerged; therefore, no interviews were conducted after this point.

### **4.3 Analysis**

The interview data were analyzed by using inductive content analysis. Content analysis is a method of analysing written, verbal, or visual communication messages ref.(99) Major benefits of using content analysis are its content sensitivity and flexibility in terms of research design ref(100, 101) . It has been used for developing an understanding of the meaning of communication and to identify critical communication processes ref (102, 103). Inductive content analysis is used when the area under study is unexplored and clarity is lacking about participants' perceptions ref (104). Each interview was coded immediately following transcription, unlike the quantitative research studies where analysis is conducted once all the data have been collected.

Interview transcripts were read and notes were made during reading to facilitate immersion in the data. Each transcript was broken down into codes, which represented an idea by reading them line-by- line. Transcripts were read again and again to generate as many codes as possible to describe all aspects of the data collected. Codes were compared and contrasted within and between the interviews to find the similarities and differences. These codes were further clustered into sub-categories and categories. Codes which did not fit any categories were labelled under miscellaneous categories. They were moved into existing categories, when some categories were modified. Once the categories were established, themes were identified with categories grouped under these themes. Once initial categories were established, they were

observed closely in order to reduce the number of categories by bringing together the similar categories into themes. All transcribed interviews were analyzed independently by two researchers (HC and DL) and were compared at each step to maintain rigor in the process.

**Rigor:** We used Guba and Lincoln's factors to assess four criteria of rigor as suggested by Sandelowski (105, 106). Sandelowski suggested four criteria to test rigor in qualitative research (105): truth value, applicability, consistency and neutrality. Truth value of a qualitative study is tested by the credibility of the results (106). A qualitative study is considered credible when the experiences studied are interpreted and presented in a truthful way so that the participants can recognise their experiences by reading the interpretations of the researchers (106). Although we did not report back the findings of our study to the participants, we supported all of our study findings by relevant quotations from the participating FPs which supports the truthfulness of those findings.

According to Guba and Lincoln, the applicability of the results of a qualitative study is determined in terms of fittingness (106). Fittingness refers to the ability of the research findings to fit the data from which they were derived. Quotations from the FPs demonstrate the fit between data and findings. Two threats to fittingness are 'elite bias' and 'holistic fallacy'. Elite bias is caused by overrepresentation of the data from those participants who are more accessible, eager to participate, and articulate. Holistic fallacy makes the data look more patterned and regular than is the case. In other words, the findings do not contain all of the data but are presented in such a way that it appears they contain all of the data. Both of these threats can reduce the applicability of the findings. In this study, we have provided supporting quotations for the findings from different participants. By numbering the quotations according to the participant they originated

from, we provided opportunities for readers to determine whether there was over representation of perceptions of some participants. Moreover, presenting disadvantages of some features of AD further confirms the representativeness of the findings because the theme was not inherent to the concepts in the research questions.

According to Guba and Lincoln, the consistency of the findings of the study is evaluated by their auditability (106). A study is auditable when there is a clear description of the decision trail by the researcher. The auditability of this study was increased by presenting a decision trail to the research supervisor and committee members. The description of the coding process contributed to auditability.

To support auditability, close contact with one of the supervisory committee members, experienced in qualitative research, was maintained throughout the study. The analysis process and interpretations were constantly discussed with this experienced committee member.

We used confirmability as the criterion for neutrality as suggested by Guba and Lincoln, which means that we have been reflexive about the research process and the findings (106). Reflexivity involves awareness of researchers' predispositions and beliefs that can influence decisions during the data collection and analysis, including categories not ultimately borne out by the data (107). In our study, the choice of some categories and themes, such as ; utility of the content and outcomes of AD visit may have been influenced by our attempt to answer a priori defined research questions on usefulness, acceptability and feasibility of AD.



We also addressed confirmability by triangulation of our study results, which was achieved by conducting independent qualitative analysis by two researchers (HC and DL). One of the researchers (HC) was not involved in the parent study evaluating the effectiveness of AD for RA. Furthermore, the codes, categories and themes were constructed under the supervision of a third researcher (WH, member thesis committee) who was external to the effectiveness study on AD for RA. This was done to reduce the effect of investigator bias as suggested by (107).

#### **4.4 Results**

Of the 23 FPs who completed the survey, 12 FPs participated in the qualitative descriptive component of the study. Of the interviewees, 66.7% were females. Fifty eight percent of the FPs interviewed had previous experience with AD while the remaining 42% were receiving AD for the first time. Fifty percent of the FPs had at least 10 – 20 RA patients in their practice. The characteristics of the FPs interviewed are provided in Table 10(page 93). The survey responses of those who participated in the interviews did not differ from those who did not participate in the interviews (all mean or median values for all items of the survey varied by 1 unit or less between the two groups), indicating that their opinion of AD was similar (Table 11, page 94)

We constructed four themes from the interviews with the family physicians. These themes were: Valued features of AD, Utility of the content, Disadvantages of AD, and Outcomes of AD visit. A number of categories and sub-categories supported the main themes. The themes, categories and sub-categories are summarised in Table 12(page 95) and are described below along with some supporting quotations from the transcribed interviews.

## **Valued features of AD**

FPs identified a number of features of AD which they valued and which can be described under two categories: convenience of AD and opportunity for one-on-one interaction. AD was considered a convenient way of receiving CME information by many FPs, because it allowed them to incorporate CME into their regular work days. The one-on-one interaction during AD visits allowed them to explore their specific areas of interest without any interruption; it provided the opportunity to ask questions face-to-face. These valued features were raised by most of the FPs in this study.

**Convenience of AD:** FPs interviewed in this study indicated several aspects of the convenience of AD were valued. Many FPs appreciated being able to schedule the AD visit into their regular work day, without having to take time off. This was seen as being less disruptive to their clinical practice than having to cancel a day, or part of day, in order to attend a CME event. They also valued the AD visit occurring during clinic time and in their office because they regarded it as in the best interests of their patients. This enabled them to keep their offices open and to see more patients.

*I'm sure my patients like that too because, you know, if you have to book a half day off or a full day off, it might not seem like a big deal to us but it's actually a big deal to our patients especially if the office is closed and they can't get in to see someone when they need to be seen (111/78).*

The opportunity of being able to schedule the AD visit at a time of their choice, also allowed them to schedule the visit according to their clinic schedules. They found this flexibility in scheduling convenient, as opposed to traditional CME courses or events, where they had to modify their clinic schedule according to the CME schedule.

*Because I didn't have to work after hours and I didn't have to change my schedule (114/48).*

Having AD visits scheduled during working hours, as opposed to taking time during evenings or weekends, was preferred by some FPs because it was seen as not impinging on their personal time.

*It didn't take as much time out of practice or personal time (105/18).*

Another valued feature of the AD visit was its location in the FPs' offices. Most FPs valued having AD visits in their offices because it saved them time and the inconvenience of having to travel to another location for CME,

*I don't have to take time off work and drive half way across the, you know, I don't have to drive across the city and take a whole day off of work and all that type of stuff to do it (101/105).*

Some FPs also commented on the lack of need to find a replacement for their clinics when AD visit occurred in their offices, during clinic hours.

*Because most of the CME events are during the week. And it's not that easy to find someone to come in and replace a doctor when they're away for the day. And it's more the convenience and the fact that they're able to come to the office, I think, is a real advantage (111/74).*

The short duration of the AD visit was also valued by many of the FPs. The FPs contrasted the short duration of the AD visits with time required for other CME events. Short AD visits permitted them to squeeze time for CME among patient visits during their regular working days, which meant it was valued option.

*Compared to grand rounds at the hospital, which would be an hour to do a presentation (105/20).*

**One-on-One interaction:** Most FPs particularly valued the one-on-one interaction provided by AD. This feature provided them with opportunities to ask questions, discuss examples and raise challenges from their practice: focus on their personal information needs. It was considered a ‘luxury’ by some FPs to have a knowledgeable person meeting with them face-to-face to answer their questions.

*Well there was a person I could ask questions to if I couldn't understand things and a person who was asking me questions to see if I understood. That's much different than going online or somewhere (116/9).*

The FPs valued asking questions face-to-face because it was faster and more efficient than having to search for their answers., such as online, in journals, or by calling a specialist.

*It gives you the opportunity to ask specific questions that one may have rather than, if you have a specific question, rather than trying to hunt it for yourself, if the person knows, it's efficient and it's quick (113/18).*

They commented that it was helpful to ask as many questions as they wanted without waiting for a turn or worrying about other people waiting to ask questions. In addition to asking questions specific to their practice, FPs valued opportunities to discuss their practice examples and specific patient concerns during the one-on-one visit.

*I guess if you have specific cases and scenarios too, it's nice to be able to ask specific case based or patients specific questions versus all the other types of CME where you don't actually have face-to-face with somebody (113/46).*

FPs valued controlling the AD sessions to focus on specific areas rather than attending an entire CME event to get to their topics of interest or personal information needs. If there was something with which they were already familiar, they could ask the academic detailer to skip that information and to move to the next point. Some FPs indicated it was valuable to point out their

needs at the beginning of their AD session so that the academic detailer could tailor the presentation to their needs, after the standardised message had been delivered.

*And you're not having to sort of get side tracked by other people's concerns. You can ask very pointed questions and get immediate feedback. (111/61).*

Although most of the FPs valued the one-on-one feature of AD, a few FPs contrasted these with the advantages of group learning and with the convenience of online CME. They felt group learning could provide them with opportunities to listen to and learn from peers' questions and experiences. On the other hand, the same FPs argued that group learning can be less time efficient because it could include conversations that they might find useless or irrelevant.

*No I don't. I just think it's different. I mean you get different things from different types of programs and in a one-on-one, you get to ask your questions more and in a group you maybe listen to other people's questions more. So you get things asked that you maybe wouldn't have thought of and that are interesting. Sometimes it's the opposite. You get stupid questions asked that you just think, oh let's get on with it (109/225).*

The FPs who preferred online CME indicated they could control the session and skip any familiar information. They objected to listening to a standardized message during the AD visit if it was familiar to them. The FPs also indicated they appreciated the flexibility of not having to complete the entire online CME in one sitting.

*And the other disadvantage of, less so than the theatre but the great advantage of just self-directed study where you're just on a computer, is you can just flick across stuff you know. And you're not wasting 10-15 minutes of going through it. You can say, oh I know all that and I'm going to the next level (109/83).*

### **Utility of content**

The utility of the content (i.e. both the presentation by the detailer and the resource kit provided for them to use in their practice) was discussed by most of the FPs. In general, FPs found the content of

the AD visit useful when the content: was new to them; served as a reminder of familiar information or reinforced correct practice; provided practical rather than theoretical information; was evidence based, synthesised and summarised; was relevant to their practice; and met their expectations and fulfilled their needs. Most FPs linked the utility of the content to their future RA management because they did not see RA patients very frequently and regarded themselves as comparatively less informed about the recent treatment guidelines. The content of AD visit was useful as a quick knowledge update and for clarifying their doubts.

*Because often times when you're working in practice and you get a patient with a certain problem Like, say you had a patient with, well, rheumatoid arthritis. It's not hugely common and so you don't have at your fingertips all the resources in one place (109/20)*

Some of the FPs interviewed also linked preferences for the ways the content was presented to the usefulness of the content. Whether the way the content was presented during the AD visit met their needs influenced their views about its utility. Some of them liked to have the material left behind as a resource kit.

*No I actually thought it was quite good and I just tucked it away in the back of my mind thinking that if I ever needed to get a bit more information I could use that. So I have it sitting in the office now. So if I ever have a patient that comes in and I have a question, I might go through it quickly while they're here and just, if I have any questions that come up in my mind, because I think it is quite good (111/132).*

Some FPs stated that the written material left behind was useful because it served many purposes. It served as a reinforcement or reminder, because it is not always possible for them to remember everything discussed during the visit, as a reference for future use, and as a tool to increase patient involvement. Material left behind was also easy to access during the clinic if needed. They found that the information included in the resource kit (such as the diagrams, patient assessment tools,

recent treatment guidelines etc.) and the way this information was presented in the resource kit facilitated sharing information with patients and getting them more involved in the care for their RA.

*Well just as I said, you know, I've got a toolkit, you know, I've got pictures I can show the patient. And all of that helps. And then we also have for the follow-up visit because then the patients know that they're not being seen and dumped. I think they get a better sense of being cared for (125/146).*

Some FPs also mentioned that they found the resource kit particularly useful because of its inclusivity. It had everything relevant to RA management in one single place, including RA treatment guidelines, diagnostic tests, information about drugs and patients resources. They also found the material in the resource kit to be well organised, making it easy to find the information during a clinic.

*The trouble sometimes with folders, you know, you go to CMA a lot and you get all these [sort] of things that you look at and you never look at it again. You think you will be, but you won't because the organization isn't great or you can't quite remember where that topic was. But being that this is all in one kit, I don't think I've ever been given something that's quite so well put together actually (109/33).*

Even though some FPs were not planning to prescribe DMARDs themselves, they found it useful to become familiar with DMARDs because these are medications they will encounter with their RA patients after a rheumatology consult.

**New Content:** Some FPs stated that the content presented during the AD visit was new to them and, hence, was useful. The FPs who were unfamiliar with prescribing DMARDs for RA appreciated the information regarding medications. Other FPs indicated they were familiar with the message of early DMARD use, but they nonetheless, found the reinforcement of information useful.

*So the message of the early use of DMARD was not 100% new to me. So that's, it was useful reinforcement but it was not completely new to me because I had heard the message before (102/14).*

One of the FPs indicated that continued medical education is not always about learning new things but also about reinforcing what they have already learnt in the past from various sources. One of the reasons for their familiarity with DMARDs was the knowledge gained from the rheumatologist consultation letters on their RA patients. The familiar content was still viewed as useful because it reinforced their prior knowledge or it confirmed that their practice was up to date and this built their confidence.

*Well it gives some ..., well you're always wondering what's new and what's happening, and what's evolving. I think it was just a reminder about the whole process and just sort of reinforcing what you remembered from the last time. CMA is not just about learning new stuff. It's about being told stuff again and again so that you remember. So I mean in that way it's not a waste of time and it was very well done (109/61).*

A number of topics discussed during the visit or included in the toolkit were described as new information, which was useful. This new information increased their confidence with RA management. This included information about the importance of early diagnosis of RA and early referral to a rheumatologist, how to access a rheumatologist rapidly, including the referral prioritization tool (Canadian Arthritis Referral Tool), useful blood tests for diagnosis beyond the rheumatoid factor, the follow-up assessment check-list with the joint involvement diagram and the scale to rate disease activity, the list of community resources, and the patient education hand-outs.

*Because for some physicians this is new information and we don't have the confidence to start treatment or identify it early or to refer early (105/83)*



**Relevance of content:** Some FPs also discussed the importance of ensuring that the content of the AD visit is relevant to their needs and to their practice. The topic of RA was found to be of interest to most FPs. Despite the fact that RA is a relatively infrequent disease, they had seen RA patients in their practices and hence they felt a need for updated information on this topic.

*Well I probably have a handful of RA patients in my practice and it's good to know that, you know, the treatment options that are available right now that are current with what's being done rather than feeling like I'm behind the current information (113/64)*

**Underlying needs/expectations:** FPs found that the content was useful because it fulfilled their underlying need for continuing to update their knowledge, which they felt was important for rheumatology because they feel that there are not enough opportunities for CME on rheumatology topics. They considered it time consuming to stay updated on every important topic. Some of them only wanted reassurance that their RA management was up to date.

*Well I mean, you know, I've been in practice for almost 25 years now I need constant updates and I can't possibly get, you know, it would be months long of these that I would have to go on to have to keep up on every single topic (101/52).*

While some FPs voiced specific underlying needs and expectations, others did not have any a priori expectations, or had not identified specific underlying needs. Nonetheless, they found the visit useful and learnt about RA management from this visit.

*Well I didn't really have any underlying expectations. I was curious and it worked well and I think my expectations were exceeded meaning I learned more and I got more out of it than I thought I would.(114/242).*

A few FPs mentioned having very specific expectations from the AD visit. They were expecting to get some important clinical information which they referred to as “clinical pearls”. Some

FPs also stated that they did not get opportunities to discuss their practice with their peers very often, so they wanted the opportunity to confirm that their practice was up to date.

*My main purpose of doing the academic detailing was more to reassure myself that I was doing everything in an up to date fashion. But I actually felt fairly comfortable managing people with rheumatoid arthritis already (111/16).*

**Practical Information:** FPs appreciated receiving practical information, as opposed to theoretical knowledge, about a topic. They regarded the information presented during the AD visit and included in the resource kit as useful for the day-to-day management of their patients. Recent changes in the guidelines for RA management were presented in the context of practical information to help them implement the guidelines. For example, the message of the AD visit emphasized the importance of early referral for RA, and information was provided about what to include in a referral request, to help rheumatologists prioritize the referrals. This was seen as very useful by a number of FPs. Other information that some FPs found useful included learning that rheumatologists agree to see new diagnoses of RA urgently and that early and appropriate treatment with DMARDs helps to prevent joint damage, controls disease activity and improves the long term outcomes for RA patients. Some FPs indicated that theoretical information, without supporting practical ‘how to’ information, was not useful.

*No I think this one was, you know, perfectly targeted and well balanced etc. with the amount of information and the sort of, direction. And you know, also the very practical. So, you know, how do you go about something like this? I mean, you know, you can sit there and you can tell me that, you know, they need to be referred early. But unless you show me how to do that, I’m dead in the water, you know (101/40).*

**Evidence-based, summarised and synthesised information:** Most FPs appreciated the evidence-based nature of the information presented in the AD visit. They found it useful that experts in the field had summarised and synthesised the literature for them. This was more time efficient than reviewing

the literature themselves. Some FPs identified physician input in choosing, reviewing and summarising the take home messages, which they felt helped ensure the relevance of the content to the clinical practice of FPs. They found it useful that points they regarded as important were emphasized. They appreciated specialists' input in the content development because they relied on specialists' expertise for selecting the essential and most relevant information from the literature, and for telling them about how evidence should inform their clinical decisions.

*I mean, I think that this particular one had been gone over by a physician who said, okay, what do I really need to get across to the family practitioners (101/85).*

*I think it was very well laid out in the sense of what, you know, I need as a GP. As I said, some of them do get bogged down in the academics of it. And, you know, that's all very well but I cannot read for every topic I need to deal with in medicine. I can't read the top 25 articles [laughs]. To me that's what specialists get to do and summarize it and make a decision of whether or not they're good articles or not (101/110).*

Many FPs regarded the AD visits as “perfectly targeted and balanced in amount of information and direction”. Some FPs contrasted this AD visit with other CME sessions where they described being over-loaded with information; and finding such kinds of sessions less useful to them. They stated that when the results from a large number of individual research studies are presented during a CME session it is more difficult for them to draw conclusions about how each study should influence their clinical practice and their clinical decision-making. They appreciated having evidenced-based information presented along with the take home messages about how this information should influence their clinical practice.

*No, no. I'm not talking specifically about the one I'm having but I'm saying, you know, that can be a danger, right. I mean it's a danger in all of medicine. You know, if I go to something on cardiology, they get talking about all the single trials. They don't just nicely summarize them for me (101/38).*

**Pharmacist as the Academic Detailer:** The utility of the content of the AD visit was also evaluated in terms of the presenter of the content. Most FPs were comfortable having a pharmacist as the academic detailer; they trusted the information he presented, and, hence, found the content useful. Pharmacists were acceptable as the academic detailer by most of the FPs because the FPs felt they were knowledgeable about the topic, especially when medications were the focus of the AD. They considered pharmacists as a part of the patient care team.

*Well it doesn't... if you have a knowledgeable pharmacist who has got good information, it's got just the same as everybody else giving you the information (116/101).*

The FPs described the pharmacist for this AD visit as well prepared, knowledgeable, and efficient in identifying areas which were familiar to the FPs. They appreciated that he tailored the delivery of the AD content to their prior knowledge, by not wasting time over familiar areas and quickly moving on to the next topic, when repetition was identified by the FPs. FPs also mentioned trusting pharmacists to deliver evidenced-based and unbiased information about medications. They felt this was more useful to them than information presented by pharmaceutical company representatives, for example, because of the balanced and unbiased perspective offered. All FPs interviewed stated they had no problems with having a pharmacist as the academic detailer, and that they would not prefer any other health professional to deliver the content of this AD visit. (In reply to the question: Did you mind having a pharmacist doing the academic detailing).

*No not particularly if we're dealing primarily about medication. No it was fine (116/105).*

But one of the FP mentioned that some of his peers are used to learning from other physicians or specialist so they might be reluctant to learn from a non-physician.

Despite the overall acceptance of a pharmacist as the academic detailer, when specifically asked if they would prefer a different health professional, FPs interviewed described some limitations to having a pharmacist in that role. They mentioned that pharmacists lacked a clinician's perspective and that this influenced the kind of questions they could ask or the kind of discussions they could have with the academic detailer. They held back from asking questions about clinical presentation, or diagnosis, or dealing with real life clinical situations. They indicated if the AD visit had been done by a clinician, they could have given examples from actual cases or discussed their experiences. They were comfortable with a pharmacist for this AD visit because the message of the AD focused on medications, but felt it would be less appropriate if the focus were on the disease process, diagnosis or clinical manifestations.

*That's the only, like I say, the drawback is because they don't really see the person in the same way. They don't have to wrestle with a lot of the different kind of diagnostic dilemmas that we sometimes get into. They're more focused on the treatment. But they don't have to, they're not in a position where we have to arrive at the diagnosis in the first place (111/100).*

While most FPs were happy with the pharmacist as the academic detailer and trusted the information he presented, some of them would have preferred to have a rheumatologist as the academic detailer because of their clinical expertise. Despite their preferences, they acknowledged that it would not be practical for rheumatologists to do academic detailing.

*If it's available to have a specialist in the field, that would be great because they actually do it more on a day to day and, you know, patient to patient than a pharmacist would, but that's difficult to arrange in terms of their time. And we're certainly open to having a rheumatologist do it (113/106).*

Some of the FPs realized and appreciated that there had been input from rheumatologists in the development of the material presented. This was an acceptable alternative. It also enhanced the credibility of the material presented by the pharmacist.

**Disadvantages of AD:**

FPs also commented on some aspects of AD which they perceived as less useful or as disadvantages of AD compared with other forms of CME. Those disadvantages included challenges incorporating CME into regular clinic schedule, delivering a standardized message that did not meet the needs of some of the FPs, providing information that was not new to some FPs, and expecting FPs to read or use materials after the visit being unrealistic given their busy schedules.

**Challenges incorporating CME into regular clinic schedule.** Although most FPs found it convenient to have AD visits during their clinic time, some challenges were raised. Some FPs found it difficult to schedule the visit during working hours, particularly over lunch breaks because they felt it did not provide adequate time.

*And I have an extremely busy practice where I have no free time. So to have somebody come and spend half an hour when I have no lunch hour to start with, becomes very time consuming (116/51).*

The FPs described scheduling AD visits during office hours as more likely to be interrupted by unpredictable events, such as last minute patients to fit in, because time during clinic was not “dedicated CME time”.

*The only disadvantage is trying to find time in your day to schedule and set aside for somebody and then if there's people coming at the last minute, etc., it's not dedicated time, in the event of a Saturday or something (102/28).*

Some FPs contrasted the difficulty of fitting AD visits into the tight schedule of office time, compared to scheduling CME events during the weekend or during time booked off from clinic, which was dedicated CME time, which was free of interruptions. One of the FP also raised the issue of paid versus unpaid time. They would have been unable to bill for patient visits during the time they spent with the academic detailer. Therefore, scheduling AD during clinic time was viewed by the FPs as having negative economic implications.

*Yeah I'm paid sectional so it was okay in this setting but if I was paid fee for service, that's a half an hour that I could have seen two patients (120/100).*

Although most of the FPs liked short AD visits, some FPs indicated a preference for slightly longer visits so they would not be required to spend time looking at resources or other material provided, after the visit. In other words, short AD visits did not allow the academic detailer to cover all the material and did not allow for detailed discussions. Some FPs complained there was insufficient time to discuss their specific topics of interest, which was a valued element for them. For example, FPs wanted opportunities to discuss particular drugs, along with information about monitoring for drug toxicity and information about referring to specialists. The FPs balanced the benefits of longer AD visits against difficulties finding time to fit longer AD visits during working hours.

*Some people might want a bit more detail, in depth, I guess. Again, it's also because it is brief. You can't explore sometimes possible. I was okay but some people might say there are issues with it being brief as well. But if you're in the middle of lunch hour and 1:00 patients are coming in. So there's a hard finality to the session when you have to end. But that would be about the only thing that I could think of as a disadvantage (113/56).*

**Delivering a standardised message:** Some FPs found that delivering a standardized message was a drawback of AD in general because standardized messages failed to consider individual information needs. They would have preferred a more individualized approach, where their

knowledge and personal information needs would have been assessed prior to the AD visit, and the message would have been tailored accordingly. They felt tailoring would have made the AD visits more useful and time efficient.

*Needs assessment is a quick questionnaire to ask your comfort level and your need for knowledge in different areas on the subject (105/49).*

*So it can fine-tune what the presentation can be like rather than just a package Power Point (105/51).*

*If they have a Needs Assessment so it's a little bit tailored to the physician's need. And as I mentioned it's sometimes easier than to take an evening to go to a CMA or to have to drive to the hospital for rounds (105/105)*

*I mean I would have preferred, you know, if somebody had said, 'I want to detail you on rheumatoid,' I would have said, 'you know, can we do these subjects because these are the ones I feel uncomfortable with or my knowledge has decayed (109/46).*

**Providing information that was not new to some FPs:** Some FPs did not find the AD visit as useful because the content was not new to them. These FPs stated they were already familiar with the topic of RA and found the information presented repetitive. They mentioned they would have preferred this information to be omitted so they could have spent more time on information that better met their needs. A needs focus would have made the visit more time efficient.

*He gave me a ... presentation really on why you should go to DMARDs and I sort of knew that already. And so the stuff he talked about I actually did know. So it was more just a reminder. I mean it's a very important point and maybe some family doctors don't know about early referral of rheumatoid but I didn't find that so useful. It was well done but I just didn't find it useful for me because I already knew it (109/38).*

*So that part could have been skipped and saved a little bit of time (105/45).*



**Practical issues with using material after the AD visit:** Although the content was found to be useful by most of the FPs, some of them found the written information left behind in paper format impractical to use while seeing patients. They expressed concern about finding time to read educational material, and about integrating the practice support tools into the regular flow of the clinic in a practical way, especially with the transition to electronic medical records.

*And then most of us are going on the computer now, so what do we do with the results? You know, do we scan them into our computer or what do we do with the paper, right (114/154).*

They felt some of the tools suggested in the resource kit might be too time consuming to use during clinic, such as the RA follow-up assessment check-list. Some FPs also expressed uncertainty about how duties should be shared between FP and specialists, and whether some of the tools fell within the scope of their practice.

*I might look at it if I have time later on in the day for the resources but in North Vancouver, we have specialists who you can get into see RA.... I'm familiar with the lab tests and the clinical signs and he reviewed the information on the slides. So we haven't got time to go back to that in the office, in an office scenario (114/122)*

*Yeah I guess that would, that's... and how acceptable to rheumatologists, I guess that would be another issue is what the rheumatologists want us to do. Like, do they want us to start these DMARDs right away or do they want us to refer. I mean, how are they wanting us to handle it (109/150).*

### **Outcomes of AD visit**

There were some important outcomes of this AD visit for RA as seen by the FPs. These included their increased confidence for treating RA patients, likelihood of practice changes, and valuable take-home messages. The outcomes were particularly valuable for FPs in the context of treating a

disease with low prevalence because they have difficulty finding the time to stay current with changes in treatment and factors enhancing patient outcomes. Increased confidence in treating RA, anticipating their practice changes and articulating valuable messages delivered in the AD visit indicated the AD visit was able to reach its aim of providing up- to-date knowledge to most FPs about treating RA.

**Increased Confidence:** Some FPs mentioned that the AD visit resulted in improved confidence in managing RA patients.

*Yes it improved my confidence. It improved my ..., put it more on my radar. So if somebody comes in with things that might be suspicious, I may be more inclined to order some more of the tests (116/81).*

Some FPs were more confident about prescribing specific DMARDs while waiting for a consultation with the rheumatologist. They also felt more confident about the general management of RA as result of knowledge gained from the AD visit. One FP mentioned correctly diagnosing a case of RA using the information provided in the resource kit for diagnosis of RA. FPs mentioned various reasons why they considered their confidence improved. For some of them confidence improved due to reconfirmation of their medication use for RA, while for others it was due to having more information for diagnosing RA. Some of the FPs experienced improved confidence with RA management because the visit reassured them that their practice was current.

*Yes it did. It just, like I say, kind of validated and made me more confident that what I'm doing is up- to- date (111/140).*

Due to familiarity with the message delivered during the AD visit, knowledge/confidence did not improve much for some FPs but the reminder about acceptable practice made them feel more secure.

*Like I said, I was at a lecture that Diane Lacaille gave so many of the features were not that new to me. So I wouldn't say it drastically improved my knowledge. It just reinforced it or reminded me (102/38).*

Another FP did not report any improvement in confidence due to this visit because he thought that he could have found the same information from other sources.

*Because I would find that information anyway but it would just take me longer to find it [laughs] (109/130).*

**Anticipated practice changes:** Another important outcome of this AD visit was the FP's anticipation of practice changes in their management of RA as a result of the knowledge gained or of the increased confidence from the confirmation of their previous knowledge. They described planning to diagnose early, refer to rheumatologists early, provide information to facilitate rapid referral, start appropriate medications on time, and aim for a symptom-free state for their patients. Another FP mentioned changing how she screens for RA.

As a result of the AD, FPs anticipated referring their RA patients to rheumatologists earlier and being more persistent in ensuring they are seen rapidly. Since they practiced in an area where access to rheumatologist was relatively easy, they described preferring to focus on early referral, and letting the rheumatologist prescribe DMARDs if needed.

*I mean it's not like we're in rural BC kind of thing. So if the specialists are readily available like they are in metro Vancouver, it's harder to go out on a limb and say, 'I'll treat the patient myself (113/122).*

FPs did; however, mention that they would make their patients aware of DMARDs before they saw the rheumatologist as a result of the knowledge gained from this visit. Some FPs also described practice changes related to the management of co-morbidities in RA. They mentioned

they will be more vigilant about determining whether their RA patients receive influenza immunizations and obtaining lipid screens as a result of this visit.

Other FPs indicated they expected only fine tuning of their practice and would make no major changes in their overall management of RA because the AD visit confirmed their RA management was current.

*No I don't really expect any change because as it turns out, I think I am providing up to date care. And I suppose I can always fine tune it (111/37).*

**Expression of willingness to receive AD in future:** Most FPs stated they would be willing to participate in future AD, if the topic was of interest to them and it was easy to schedule these visits. Some of the FPs in our study had previously participated in AD through the Provincial Academic Detailing (PAD); they were usually interested in doing it again in the future. Receiving CME credits was an incentive for some FPs to agree to do AD in the future. Some also found the chart review performed as part of the CME accreditation useful and informative. Some of the other reasons for considering AD again in the future were: the convenience of AD, the opportunity for new knowledge allowing them to stay up- to- date, and AD as a means of evaluating their practice pattern and reinforcing their knowledge.

*And the fact that it's credited, right and then the fact that it had the opportunity to offer main Pro C credits thereafter and prompt the chart review. I mean to me, you know, you learn from that and you learn how you're doing with your practice, right (114/230).*

Although FPs anticipated agreeing to AD in their futures, some also indicated they preferred not to receive all of the CME through AD. .

*It's useful to do a few of them. I certainly couldn't do all my CMA that way because it's very time consuming (116/43).*

**Most valuable message learnt from this visit:** FPs described elements they considered as most valuable messages learnt from the AD visit. The FPs valued early diagnosis because they linked aggressive treatment of RA to preventing joint damage and other comorbidities. They also linked early treatment and referral to improving patients' quality of life. They appreciated that aggressive treatment and early referral could reduce the cost of RA management to the healthcare system. One of the FPs described being unaware of the importance of early and aggressive DMARD therapy prior to the AD visit.

*Well, like I said before, the most important, if I was to say the one most important thing I learned was that early aggressive treatment with disease modifying agents is I didn't realize it was so important to treat them that rapidly and to get it going so quickly (129/236)*

*Because early treatment is key to the patient's well being, I guess (109/182).*

*Well because I think if I can start... I've seen people with end stage rheumatoid arthritis and terrible joint problems. And it's not just the joints. They're at risk for other, you know, it's an inflammatory disease and I, you know, people with rheumatoid arthritis are more likely to live to have heart attacks than other people. And, you know, you can do something useful. You can prevent comorbidities like heart disease. You can improve their quality of life, which is, you know (129/240)*

## **Summary of Results:**

In general, the qualitative themes indicate that FPs were positive about AD visits. They found AD a convenient way of learning and updating their knowledge. They appreciated the one-on-one feature of AD because it provided them with opportunities to ask questions and explore areas of interest without having to worry about other colleagues' time to pursue questions. In general, the content of this AD visit was useful for most of the FPs. New content and familiar content that provided reinforcement for what they already knew were regarded by FPs as most useful. They also found practical information and evidenced-based, summarised and synthesised information useful. Content that they described as useful was relevant to their practice, met their needs and expectations and was delivered by a trustworthy person. The pharmacist as an academic detailer was acceptable by most of the FPs. Outcomes the FPs indicated from the AD visit were improved confidence in RA management and changes in their practice for RA management. Most of the FPs were willing to receive AD in future if the topic was of interest to them.

## **4.5 Discussion and Implications**

The qualitative descriptive component explored FPs' perceptions of AD as a way of receiving information about recent changes in RA management in order to optimize care for RA. To our knowledge, this is the first qualitative study on the use of AD to deliver information about RA management to FPs.

We found that most FPs in our study perceive AD as a convenient, time efficient, and useful way of keeping current with management guidelines for general medical topics and for rarely encountered chronic diseases, specifically RA. Most of the FPs indicated

improved confidence in their RA management, anticipation of changes in their practice as a result of this AD visit, and willingness to receive AD in the future.

Four themes were constructed from the interviews with the FPs including: valued features of AD; utility of the content; disadvantages of AD; and outcomes of the AD visit. Most FPs interviewed valued the convenience and the one-on-one interaction that AD visits offered. The flexibility of scheduling a short AD visit according to their schedules and in their offices, allowed FPs to incorporate CME during work hours. This saved them travel time and also alleviated the need to find a replacement for their clinic. Short AD visits were also preferred by some FPs in a study by Janssen et al. that explored the barriers to AD. They found that the FPs who declined AD visits would consider AD in future, if the visits were as short as possible (3-5 minutes). In summary, the convenience of AD in terms of scheduling, location and short duration of the visits are some factors that can increase the acceptability and hence the feasibility of delivering AD visits to FPs in the future.

In our study, most of the FPs particularly valued the one-on-one interaction provided by AD visits. It was actually described as a luxury by one FP, because it provided opportunities to ask questions face-to-face, discuss their specific practice issues and focus on their knowledge needs. One-on-one interaction also allowed them to control and direct the session according to their individual needs as compared to other CMEs, such as lectures, where they described less control over the sessions or the content. The FPs also indicated that, in general, CME sessions are tailored for larger audiences and not particularly focused on individual knowledge needs.

The appeal to FPs of the one-on-one feature of AD has not been noted in previous studies of AD. Our findings on this feature extend the literature (45, 64, 65). We argue that one-on-one interaction is an enabling factor to participation in AD. In contrast to valuing the one-on-one feature of AD, few FPs in our study discussed the advantages of group learning. They indicated

group learning provides opportunities to learn from their peers. However the same FP also felt it was more time consuming because it involved listening to conversations that were irrelevant to their practice or knowledge needs. These issues should be taken into consideration by people developing AD programs when deciding between group and individual AD visits.

The utility of the content of the AD visit was another important theme which was constructed from the interviews. Most FPs in our study described that the content was useful if it was new information to them or if it served as reinforcement of knowledge with which they had some familiarity. The specific information from this AD visit which was described by some FPs as new to them included importance of early diagnosis of RA and early referral, access to rheumatologist, alternate diagnostic blood tests, patient follow-up checklist and community resources. FPs may regard such information as new and useful to them because they recognize their need for updated treatment information on diseases like RA, which have a low prevalence rate. Although some of them indicated they had no underlying needs, their description of information they found useful suggests they may have been unaware of recent changes in treatment guidelines for RA and therefore unaware of their need for updated CME information. It is also worth discussing here that sometimes people did not voice any underlying needs or expectations, because they were not aware of what they did not know. The low number of RA patients in their practices may provide an explanation for this. Busy practitioners may not want to spend time on CME for a disease with low prevalence like RA. On the other hand, some FPs mentioned having specific expectations and underlying needs for this visit, which included reassurance that their practice is up to date, more information on medications for RA, and information that would facilitate their ability to prescribe DMARDs themselves. The topic of AD visit fulfilling the underlying needs of the participating FPs has not been discussed in the previous studies on AD for FPs (45, 64, 65)



The practical nature of the information provided in the AD visit, as opposed to theoretical information, was appreciated by most FPs in our study. They found the AD visit not only provided information about recent guidelines for RA management but also provided information on how to implement these guidelines in their practices. Information that is evidence based, summarised and synthesised by content experts was considered trustworthy and useful for their clinical practice and decision making by most FPs. They felt it was more time efficient for them to receive information that had already been synthesised by subject experts rather than reading individual studies themselves. They also trusted the input of subject experts in selecting the most relevant evidence and in interpreting the results in the context of the literature to determine how it should influence their practice. Allen et al. also found that FPs highly valued the evidence-based approach of AD (45).

FPs in our study also found the content useful when they perceived it as relevant to their practice and as meeting their needs for continuing medical information. This finding concurs with those of Allen et al. who indicated that the relevance of the topic to FPs' practice was one of the major reasons for FPs to agree to receive AD. Therefore, when planning to implement AD interventions, the relevance of the topic to FPs' practice needs to be taken into consideration, to increase the acceptability of AD.

The perceived usefulness of the content was also influenced by the extent to which the FPs trusted the person delivering the AD visit. Using a pharmacist as the academic detailer for this AD visit was acceptable because the pharmacist was found to be trustworthy and knowledgeable by most of the FPs in our study. The pharmacist was regarded as suitable because the focus of this AD visit was on medications for RA. Some FPs indicated they would have preferred a physician if the topic had focused on disease manifestations or other clinical issues rather than medications. They mentioned, however, that having a pharmacist did restrict

the type of questions they were comfortable asking. This finding can guide AD program planners in their choice of health professional for delivering AD. The health professionals should be chosen based on the nature of the content of the AD message. Our finding that FPs trusted the information presented by a pharmacist was in contrast to findings from studies by Allen et al. and Van Eijk et al (45, 84). Allen et al. and Van Eijk reported that having non-physicians as academic detailer was a major barrier to participation of FPs in AD (84). Allen et al. also found that there was a trend towards higher participation in AD when the academic detailer was a physician, but the results were not statistically significant (45). Janssen et al. found that some FPs questioned the objectivity of the information; felt the information provided was politically influenced, and were resistant to learning from others in general (65). In our study, a few disadvantages of AD were discussed by some FPs when specifically probed about whether they could think of any drawbacks or disadvantages. In most cases, FPs did not mention disadvantages when they were asked about their global impression of AD. Most of the disadvantages identified are counterparts of advantages (i.e. the alternative view of a feature that was valued) or relate to personal preference. For example, while most of the FPs considered scheduling AD visits during working hours as a convenience, some FPs considered scheduling AD visits during working hours challenging because it was not dedicated CME time and they could be interrupted more easily. Some FPs indicated that the short duration of the AD visits did not allow for detailed discussion, and required them to look at the AD material on their own time. These drawbacks and challenges need to be carefully balanced against the convenience of using clinic time for CME purposes. Similar results were obtained in other studies wherein spending office time for CME was perceived as a barrier to participation in AD for FPs who had not done AD in the past (45, 65, 84). In contrast, Allen et al. found that physicians who had actually used AD did not regard time as a barrier to AD. Results from Allen and colleagues'

study concur with our finding that AD during work hours is a convenience rather than a barrier. Some of the content which was considered new by some FPs was already familiar to others and, hence, was considered less useful. Similar findings were obtained by Janssen et al. in their study about barriers to AD in general practice (65). Some FPs in their study found the information in the AD visit lacking novelty for them and was therefore described as less useful.

We also found that some FPs in our study regarded the delivery of a standardised message as a disadvantage of AD. They would have preferred if the message of the AD visit had been tailored to their individual needs. They felt this would have been more useful and time efficient for them. This finding presents a challenge because one of the basic principles of AD is to deliver a standardised message, which has been developed by subject experts, based on evidence and relevance to the majority of the target population. (44). This finding has implications for experts planning AD content and for health professionals delivering AD. They should consider ways of addressing individual needs and providing tailored information, once the standardised message has been delivered. Academic detailers can assess the individual needs of physicians before starting the AD session and incorporate considerations of their needs. For example, academic detailers can emphasize topics physicians identify as unfamiliar and spend less time on familiar topics. They can ensure sufficient time is left during the visit for answering individual questions, or for providing additional information on specific topics of interests to the FP. Our finding adds to the literature on AD visits because the importance of assessing the needs of the physicians before the AD visits and tailoring the visit content had not been previously identified.

There was a disparity found around the reaction of interviewed FPs to the material left behind as a resource kit. Most FPs found the content of the resource kit, which provided practical tools to support FPs in their clinical practice, useful. The inclusivity and the

organisation of the resource kit for RA was viewed particularly positively by FPs because it facilitated easy access to information during their clinics. Some also mentioned they felt the content of the resource kit was helpful in allowing greater patient involvement in their care. Allen et al. also found that leaving material as part of an AD visit was an enabling factor for FP participation because they used the material, for patient education (45). The FPs in their study suggested including more patient educational material in future. However, providing detailed information in the form of a booklet or resource kit may go against some of the principles of AD as discussed by Soumerai et al., which recommend brief, graphic print materials only (44)

Some of the FPs interviewed found that referring to the information left for use after the visit was time consuming and impractical. Another FP objected to taking time to familiarize himself with the patient assessment tools provided during the AD visit when rheumatologists can do this task more easily. He felt the assessments were outside the scope of his practice. This finding reflects the need for clarifying the respective roles of FPs and rheumatologist in a shared care model of RA care. Another issue raised around supporting material provided, was whether the format was electronic or paper-based. For practices with electronic medical records, it is impractical to incorporate paper-based material into their practice. Given the growing trend towards transition to electronic medical records in medical practices, people implementing AD programs should ensure that supporting materials meant for clinicians to use after the visit, are available in various formats, including both paper-based and electronic formats, and can be integrated in an electronic medical record system.

As evidenced from our study findings, FPs' perceptions of the usefulness and disadvantages of AD visits will influence the acceptability of AD visits for FPs. By delivering information during the AD visit, which is considered useful by most of the recipients, and by minimizing the disadvantages of AD discussed, the acceptability of AD for FPs may be

increased. As discussed earlier, FPs' perceptions of usefulness are influenced by their individual preferences and needs. Therefore the usefulness of the AD visits could be increased by tailoring the visits to the FPs' individual preferences and their information needs, while still respecting the requirement to deliver a standardised message, which is a core principle of AD.

The qualitative themes in our study suggest that the AD visit for RA led to some important outcomes. Most of the FPs described increased confidence in RA management as a result of the visit, anticipated making changes to their practice, and stated they had learned valuable messages from the AD visit which they anticipate will improve the quality of life for RA patients. Most of the FPs also indicated they would be willing to participate in AD again in the future. Similar findings about willingness of participating FPs to receive AD in future were obtained by previous studies (45, 64). The study by Habraken et al. also found that 91% of their participating FPs were willing to participate in AD in future with a rating of 4 or 5 on a five point likert scale (64). Allen et al. found that 93% of the previous users of AD in their study were also willing to participate in AD in future. However, Janssen's et al. in their qualitative study found that the refusers of AD were willing to participate in AD in future only if the visits were 3-5 minutes in duration (65)

They mentioned being more aware of the recent treatment guidelines for RA and understanding the importance of early referral and treatment for RA. The increased confidence of the FPs interviewed may have been the result of improving knowledge gaps. Some of them mentioned not seeing any improvement in their knowledge because they were already aware of and following the current guidelines, but they still found the visit useful in reassuring them that their RA management was up to date.

As a result of this AD visit for RA, most FPs anticipated changes in their management of RA; some indicated they planned major changes while others expected only fine tuning their

current practice. The changes included attempting to diagnose early, referring to rheumatologists early, writing more effective referral letters, starting appropriate medications on time, and aiming for patients' symptom-free states. FPs' anticipation of these important changes after the AD visit, suggest the AD visit met a CME and clinical care need, and also illustrates FPs' willingness to modify their practices. This is an important outcome which has the potential to eventually lead to optimizing the care for RA. However, it is not clear that these self-reported changes will in fact translate into behavioural changes. This needs to be evaluated in an effectiveness study.

Our results also indicate that AD on the topic of RA was acceptable and useful to most FPs interviewed. Given the low prevalence of RA and the limited time that FPs have for CME, this finding is very informative and demonstrates that AD can be used for clinical situations that are not seen frequently by FPs, when information and care needs exist.

Overall, our qualitative findings support the limited extant literature about FPs perceptions of AD. Specifically there was no available literature on AD for RA management so our findings on this topic were novel. Because our questions focused on FPs' perceptions of AD for RA our results provide evidence that AD can be a promising technique for other chronic and rare diseases. Most FPs valued AD as a CME technique and appreciated its convenience, one-on-one interactions, and evidence-based information. Their perceptions of improved confidence, anticipation of changes in RA management, and willingness to receive AD in future reflects their acceptability of this technique as a way of receiving information for the management of RA.

## Chapter 5: Conclusions

The aims of this thesis were to synthesise the available literature about the effectiveness of AD at optimizing drug prescription behaviour of FPs in primary care setting and to understand FPs perceptions about AD as a way of receiving information about RA management and optimizing RA care. We wanted to gain a better understanding of whether FPs consider AD a useful method for delivering information about the changes in RA treatment guidelines. We also wanted to identify how acceptable and feasible AD is for FPs in primary care setting. The three components of this thesis, including the systematic review, cross-sectional survey, and qualitative descriptive component, contributed to our understanding of the use of AD for RA.

The results of the systematic review confirmed the effectiveness of AD at influencing drug prescription behaviour of FPs. Survey findings suggested that most FPs, who participate in AD for RA, consider it a useful CME technique for delivering information on the topic of RA management. Our findings also suggest that AD for RA is well accepted by FPs who participate in it. Qualitative data and analysis provided evidence about why FPs found AD useful and the specific utility of AD for RA. We identified disadvantages to AD that are important if FPs are to be encouraged to adopt this form of CME in primary care. Qualitative results showed that AD was convenient, useful, feasible, and acceptable for most of the FPs interviewed.

The limitations and strengths of this study are discussed below.

**Limitations:** This study has some limitations which are important to discuss. The favourable perception of FPs, towards AD, in our study, is prone to potential selection bias. The FPs who

accepted AD visits were more likely to have a favourable opinion of AD than those who refused the AD visit. Furthermore, the FPs who agreed to participate in AD may also have been better informed, more likely to attend CME events in general, more interested in learning from medical research, and more willing to consider making changes in their practice, than FPs who chose not to participate in AD. Therefore it is important to recognize that our results represent the opinions of FPs who participate in AD visits and may not be generalizable to all FPs, particularly to FPs who chose not to participate in AD.

One could also wonder if our results were influenced by another selection bias, related to people who agree to participate in interviews. It is possible that, among those who participated in AD, the FPs with more favourable opinions of the visit were more likely to agree to be interviewed and that FPs who were not satisfied with the AD visit were less likely to agree to participate in the semi-structured interviews. To evaluate for this potential bias we compared the survey responses of FPs who agreed and those who refused to be interviewed; and we found no clinically meaningful differences. Given the high response rate to our survey (82%), and the lack of differences, we can be fairly confident that this selection bias did not have a major influence on the results.

The perceptions of AD may also be influenced by the competence and personal characteristics of the academic detailer. In our study, the academic detailer was found knowledgeable, competent and well prepared, which might have influenced the perceptions of participating FPs.

Many FPs mentioned that they were aware of the most recent guidelines for RA management and were incorporating those guidelines in their practice. These results are in contrast with findings from previous studies in BC from our group which found that people with RA, at the population-level, were not receiving the care recommended for RA, and were often



not receiving DMARDs (22). The discrepancy points to the possibility of social desirability influencing the responses of interview participants. However a number of other factors, unrelated to the FPs, could also explain why patients may not be receiving recommended treatment, such as patients refusing recommended treatment, fear of toxicities due to comorbidities, access barriers such as cost, etc.

Another limitation of our study is the small sample size for the survey which influenced the precision of the survey results and did not allow us to evaluate the influence of different physician or clinical practice characteristics on FPs' opinion. On the other hand, this was not an objective of our study. The limitations for the interviews are those inherent to all qualitative research. Any qualitative analysis includes a certain element of subjectivity and is influenced by the researcher's background, perspective and personal point of view. To limit the influence on study results, the data were analysed independently by two researchers (HC and DL), all results were supported by quotations from participants and the interviewer was at arm's length from the academic detailer. Furthermore, the themes and categories identified were reviewed by a third researcher (WH) who was external to the parent study on the effectiveness of AD for RA.

**Strengths:** To our knowledge, there are no publications in the literature about the use of AD specifically for RA. This study is the first to explore FPs' perceptions of AD for an infrequent disease such as Rheumatoid Arthritis. Moreover, AD has not been used very frequently for the management of chronic diseases in general.

Another strength of this study is the mixed methods approach, which incorporated not only quantitative findings for the FPs perceptions of AD but also supplemented our understanding by using qualitative findings to identify the reasons for their quantitative ratings.

The literature review has confirmed the effectiveness of AD, the quantitative data has provided evidence about FPs' perceptions of AD for RA and the qualitative findings have identified some valued features of AD, as well as challenges and barriers to AD in primary care.

**Conclusions from the Thesis:** The conclusions derived from this thesis are as below:

1. Evidence supports the effectiveness of AD for optimizing prescription of medications by FPs, with a modest effect size in the majority of studies included in our systematic review.
2. Evidence from this systematic review also supports that AD can be effective for promoting evidence-based prescription of medications or incorporation of clinical guidelines into clinical practice.
3. According to the survey results, AD for RA was perceived as useful, providing high educational value, and was convenient for participating FPs. It was generally well accepted by the FPs interviewed and led to improved confidence and expected practice changes.
4. Features of AD that were valued by many FPs interviewed included the convenience of this CME, the one-on-one interaction, having visits of short duration, receiving focused and evidence based content, recognizing input from subject experts into the content, and the practical nature of the information.
5. Some disadvantages of AD identified by the participating FPs were difficulty incorporating CME during work days, lack of dedicated CME time, lack of time for detailed discussion, lack of time to consult additional information provided for use after

- the visit, difficulties incorporating information into electronic medical record systems, and delivery of standardised messages.
6. The use of a pharmacist as an academic detailer was acceptable to all the FPs in our study, especially for topic that focused on medication use.
  7. AD was acceptable to most FPs in our study as a way of receiving information about RA management, as demonstrated by their perceptions of usefulness of the visit and content, improved confidence, anticipation of changes in RA management and willingness to receive AD in the future.

## Chapter 6: Tables and Figures

**Table 1: MeSH terms and keywords used in electronic search strategy**

<b>Concept</b>	<b>MeSH Terms</b>	<b>Keywords</b>
Academic Detailing	Education, Medical, Continuing	Academic detailing, academically based detailing, continuing medical education, public interest detailing, educational outreach
Family Physicians	Physician	Physicians, general practitioner, family practice, family doctor, primary health care provider, general practice, primary Health Care
Practice Patterns	Physician practice patterns	Practice pattern, drug prescription, antibiotic prescribing, drug dose calculation

**Table 2: Inclusion and exclusion criteria for study selection**

	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Study design	RCT, observational study with control group	Observational study without a control group
Participants	FPs in primary care setting	specialist physicians, other healthcare professionals
Intervention	AD as a single intervention (not as part of a multifaceted intervention)	other CME , educational intervention, multifaceted interventions
Target behaviour	Drug prescription	other physician practice pattern

**Table 3: Formulas**

	Formula
Relative Change (%)	$\frac{\text{Rate of prescription post intervention} - \text{Rate of prescription pre intervention}}{\text{Rate of prescription pre intervention}} \times 100$
Difference in Relative Change	$\text{Relative Change}_{AD} - \text{Relative Change}_{\text{control}}$
Absolute Change	$\text{Rate of prescription post intervention} - \text{Rate of prescription pre intervention}$
Difference in Absolute Change	$\text{Absolute Change}_{AD} - \text{Absolute Change}_{\text{control}}$
Standardised Mean Difference	$\frac{\text{Difference between group means for outcome measure}}{\text{Standard deviation of outcome measure for study population}}$

**Table 4: Descriptive table randomised control trials**

Author Year Country	Target change in Prescription rate	Rationale for target Prescription change	Type of AD visits	No. of AD visits	Sample Size*	Academic Detailer	Intervention for Control group	Primary Outcome	Analysis	Quality Score (0- 53)
Avorn 1983 USA	Reduce use of : 1) Propoxyphene 2) Cerebral & peripheral vasodilators 3) Cephalixin	Lack of evidence for efficacy (1&2); To reduce side effects (1&2); To improve cost effectiveness (3)	Individual	2	281	Pharmacist	None	change in mean number of drug units prescribed per physician over 1 yr before and after intervention	Multi-variable regression model controlling for pre intervention Rx rate among individual physicians and prescribing trends in control group.	48
De Burgh 1995 Australia	Reduce BDZ Rx for anxiety and insomnia	To reduce risk of side-effects	Individual	1	286	Three medical staff & pharmacist	None	Rx rate per 100 pt encounters with diagnoses of anxiety or insomnia	Encounter based analysis controlling for patient, doctor and practice characteristics.	46
Zwar 2000 Australia	Reduce repeat prescribing of BDZ	To reduce risk of side-effects and dependence	Individual	1	157	FP	AD on unrelated topic	Mean rate of BDZ Rx per 100 encounters with diagnoses of anxiety, sleep disorders and overall Rx for all indications	Repeated measure ANOVA comparing results of pre AD survey with surveys at 6 and 12 months post AD.	40
Ijett 2000 Australia	Increase Rx of: <u>Amoxicillin</u> with or without <u>clavulanic acid</u> , Cephalexin, Doxycycline, Erythromycin, Penicillin, Trimethoprim; Decrease Rx of: <u>Cefaclor</u> , <u>Roxithromycin</u>	Reduce risk-of side effects and improve cost effectiveness	Individual	1	112	Pharmacist	None	Total number of Rx per FP over a 3 month period	Wilcoxon's 2-sided rank sum test for between and within group comparisons	38
Ray 2001 USA	Reduce Rx NSAIDS for osteoarthritis in elderly pop.	To reduce risk of side-effects, esp. GI complications	Individual	1	220	Physician educator	None	Mean no. of days of prescription NSAIDS dispensed over 1 yr period per NSAID user	Relative and absolute change in NSAID use over one year period before and after intervention. Difference in change between AD & control groups.	49

**Table 4: Descriptive table randomised control trials (continued)**

Author Year Country	Target change in Prescription rate	Rationale for target Prescription change	Type of AD visits	No. of AD visits	Sample Size*	Academic Detailer	Intervention for Control group	Primary Outcome	Analysis	Quality Score (0- 53)
Bernal Delgado 2001 Spain	NSAIDs for OA, Increase Rx of: Diclofenac, Piroxicam; Decrease Rx of: Aceclofenac, Meloxicam, Tenoxicam	Risk of suspending treatment, improve cost effectiveness	Group	1	104	Pharmacist	None	Number of prescriptions of each type of NSAID per FP during 6 month period before and after intervention	Relative change (and 95% CI) in rate of Rx of each NSAID over 6 months before and after intervention, in AD and control groups.	49
Witt 2004 Denmark	Asthma medication in children under 16 years of age for increasing inhaled steroids and decreasing Beta-agonists	Implementing clinical guidelines for asthma medication	Individual	1	185	FP	Postal distribution of asthma medication guidelines	Number of DDD <sub>i</sub> of steroids or beta-agonists per child per practice	Mixed model adjusted for seasonal variation and general trends	48
Midlox 2005 Sweden	Decreasing prescription of BDZ & antipsychotic drugs to elderly people ≥ 65 years	Side effects like cognitive impairment, delirium, lack of coordination	Group	2	54	FP & pharmacist	None	Mean number of DDD <sub>i</sub> of BDZ or Antipsychotic drugs	Differences in geometric mean between active and control groups were calculated using a mixed model (group by period interaction, fixed effects; and practices as random effects).	43
Simon 2005 USA	Increase diuretic or beta-blocker use for hypertension in adults	Better efficacy & cost effectiveness	2 intervention arms: 1) Individual 2) Group	1	367	FP	Mailed printed guidelines	Change in guideline adherence measured as % of newly diagnosed hypertension patients treated with Diuretics or β-blockers over 1 year	Logistic regression with GEE estimating effect of intervention and controlling for clustering (FP level) and for patient characteristics	49

\* sample size of physicians in both control and AD group, \*\*No. of GP practices (no. of patients not provided), iDaily defined doses, Rx - prescription, NA - not available, FP - Family Physician  
 BDZ - Benzodiazepines, NSAIDS - Non Steroidal Anti-inflammatory Drugs, PCM - Paracetamol, COX-2 - Cyclooxygenase, GEE - Generalised Estimating Equations



**Table 5: Descriptive table observational studies**

Author Year Country	Target behaviour	Rationale for target behaviour	Type of AD visits	Number of visits	Sample Size*	Academic Detailer	Description control group	Primary Outcome	Analysis	Results Reported in Publication	Quality Score 0-47
Aspin 1996 Australia	To reduce no. of concurrent medications for elderly	Reduce risk of adverse drug reactions	Individual	2	59 AD 47 Control	Pharmacist	Similar in demographics but geographically separated from AD area; Received no intervention	Mean no. of medications prescribed concurrently per elderly patient who visited FP in 12 months post intervention.	Repeated measure ANOVA evaluating differences in mean per-doctor prescribing between the groups; differences in prescribing over time; and group/time interaction.	None No significant difference between two groups in terms of mean number of medications they prescribed at any single data collection point (df=1, F=1.72, p=0.19); Significant reduction (df=3, F=3.78, p<0.02) in prescribing in both groups due to introduction of co-payment. No significant difference between groups in terms of this reduction	42
Peterson 1996 Australia	To substitute PCM for NSAID for rheumatic diseases in elderly	Reduce risk of side-effects (gastric bleeding)	Individual	1	250 AD No information about control sample size	Pharmacist	Geographically distinct area with similar demographic characteristics; Received no intervention	Ratio of NSAID to PCM in DDD units	Change over time within and between study areas were compared, using a normal approximation to binomial distribution.	Statistically significant effect	36
Tomsen 1997 Sweden	To substitute prescribing of inhaled $\beta$ -agonists with inhaled glucocorticoids for asthma	Improve quality of care (implementation of asthma guidelines)	Group	2	70 AD 26 Control	Clinical pharmacist and a pharmacist	No intervention	Ratio of inhaled $\beta$ -agonists to inhaled glucocorticoids in DDD units	Mann-Whitney's U test to analyse difference in changes between groups & Wilcoxon signed-rank test for changes within groups	Yes (within group change for AD); no (between group difference).	41
Graham 2008 Canada	To reduce prescription of selective COX-2 inhibitors NSAIDs for elderly patients with OA	Improve Cost effectiveness,	Individual	1	231 AD 265 Control	Pharmacist (n=2) or nurse (n=1)	Differences in FP and patients characteristics adjusted for in analysis. No intervention	Rate of COX-2 Rx in DDD per elderly pt in each FP practice over 3 month periods up to 12 months post intervention	GEE model accounting for repeated measures over time, and propensity score to reduce between-group confounding on variables that describe FPs or their patients	Yes (first 3 months only)	44

**Table 6: Results of studies included in the systematic review**

Author	Medications evaluated	Target change in Prescription	Outcome Measured	Pre Intervention Prescription rate		Post Intervention Prescription rate		Reported effectiveness of AD (Statistically significant, yes/no)	Difference in Relative Change	Difference in absolute change	Effect Size calculated
				Control	AD	Control	AD				
Avorn	Propoxyphene, Cerebral and peripheral vasodilators cephalixin	-	Mean number of drug units prescribed per FP over one year period	5415	5439	4921	4174	yes	-14%	-771	-7.8
De Burgh	BDZ For Anxiety		Rx rate per /100 pt encounters with diagnoses of anxiety or insomnia	59.9	56.1	53.8	46.6	No	-7%	-3.4	NA
	BDZ For Insomnia			92.4	94.5	88.5	87.4		-3%	-3.2	
Jlett	Amoxicillin 500 mg	+	Total number of Rx by FP over a 3 month period	721	308	993	604	yes for some but not all drugs	58%	24	-0.51 i
	Amoxicillin 250 mg			652	293	825	594		76%	128	
	Amoxicillin 500 mg with clavulanic acid			229	221	333	249		33%	-76	
	Cephalexin			219	217	255	242		-5%	-11	
	Doxycycline			296	235	400	865		233%	526	
	Erythromycin			69	42	75	56		25%	8	
	Penicillin			93	76	83	82		19%	16	
	Trimethoprim			296	197	291	261		34%	69	
	All rec. drugs combined	2575	1589	3255	2953	59%	364				
	Cefaclor	-		623	829	1218	975		-78%	-449	-2.02 i
	Roxithromycin			987	874	1875	1039		-71%	-723	
	All non rec drugs combined			1610	1703	3093	2014		-74%	-1172	
Zwar	BDZ (All indications)	-	Mean Rx rate per 100 encounters with diagnosis specified	2.2	2.3	1.5	1.8	No	10%	0.2	0.42
	BDZ Sleep problems			77.2	70.5	73.5	66		-2%	-0.8	-0.08
	BDZ Anxiety			25.7	35.7	27	29.7		-22%	-7.3	-0.53
Ray	NSAID	-	Mean number of days of Rx NSAIDS dispensed over 1 yr period per NSAID user	284.9	287.2	238.39	219	yes	-7%	-21.3	-3.76
Hall	Omeprazole	+	Mean dose units prescribed per quarter, per patient	2.95	3.66	3.53	4.05	No	-9%	-0.19	-0.4
	Metronidazole			0.29	0.27	0.37	0.33		-5%	-0.02	-0.5

**Table 6: Results of studies included in the systematic review (continued)**

Author	Medications evaluated	Target change in Prescription	Outcome Measured	Pre Intervention Prescription rate		Post Intervention Prescription rate		Reported effectiveness of AD (Statistically significant, yes/no)	Difference in Relative Change	Difference in absolute change	Effect Size calculated
				Control	AD	Control	AD				
Van Eijk	Highly anticholinergic antidepressants	-	Rate of incident Rx of highly or less anticholinergic antidepressants per 1000 person years in people aged ≥ 60 yrs	5.82	8.02	8.2	7.5	Yes	-47%	-2.9	**
	Individual AD	Less anticholinergic antidepressants		+	10.32	11.8	7.9		17	68%	
Group AD	Highly anticholinergic antidepressants	-		5.82	6.36	8.2	5.2	Yes	-59%	-3.54	**
	Less anticholinergic antidepressants	+		10.32	12.72	7.9	14.72		39%	4.42	
Bernal-Delegado	Diclofenac	+	Relative reduction in number of Rx of each type of NSAID per FP	-16.55*(-26 to -6.82)		-9.06*(-17.18 to -0.94)		Yes	7.49%	1.97	
	Piroxicam			-28.23(-40.02to16.44)		-18.52 (-29.51 to -7.53)			9.71%	2.01	
	Acetofenac			-22.85(-33.84to11.86)		-29.34(-42.22to-16.46)			-6.49%	-1.28	
	Meloxicam	-		-1.17(-3.99to1.65)		-25.48(-37.81to-13.15)			-24.31%	-2.63	
	Tenoxicam			14.44(5.22to23.66)		-22.59(-34.42to-10.76)			-37.03%	-8.25	
Witt	Inhaled Steroids	+	Number of DDD steroids or beta-agonists/child/practice	0.23	0.21	0.235	0.23	No	7%	0.015	-0.09
	Beta-agonist	-		0.2	0.22	0.25	0.27		-2%	0	0.18
Midlox	BDZ	-	Prescribed DDD of BDZ or Antipsychotic drugs for elderly patients	**				Yes	-25.8%¶	**	
	Antipsychotic drugs							No	1.13%¶	**	
Simon	Diuretics, β-blockers	+	% of newly diagnosed hypertension patients treated with Diuretics or β-blockers over 1 year	57.6	57.6	63.8	70.1	No	10.96%	6.3¥	**
				57.6	59.1	63.8	72.3	No	14.75%	8.5 €	**
Atkin	Concurrently prescribed medications	-	Mean number of medications prescribed concurrently per patient	4.53	5.44	4.41	4.81	No	-9%	-0.51	0.808
Peters on	NSAIDs, PCM	-	Ratio NSAIDs: PCM in DDD	3.16∞	3	2.92	2.59	Yes	-6%	-0.17	-5.24
Tomson	Inhaled β-adrenoceptor agonists, glucocorticoids	-	Ratio β-agonists : glucocorticoids in DDD	3.91∞	3.23	2.57	1.89	Yes in AD group only	**	**	**
Graham	COX-2 inhibitors	-	Rate of COX-2 utilization measured as DDD per patient	3.6	3.98	2.57	1.89	Yes	-23%	-0.87	-0.09

\* + indicates AD intervention aimed at increasing Rx rate and - indicates AD intervention aimed at decreasing Rx rate, ¶ combined effect size of 8 recommended drugs and combined effect size of 2 non-recommended drugs, \*\* Insufficient data for calculations, ¶ Difference in relative change in geometric mean of daily defined doses of BDZ and Antipsychotic drugs as provided in the publication, ¥ Individual AD versus control, € Group AD versus control, ∞ Ratio, "Relative reduction and 95% CI in control and AD groups respectively, Rx = prescription, NA = not available, FP = Family Physician, BDZ –Benzodiazepines, NSAIDs – Non Steroidal Anti-inflammatory Drugs, PCM – Paracetamol  
COX-2 – Cyclooxygenase

**Table: 7 Characteristics of survey participants**

<b>Family physician characteristic (N=23)</b>	<b>Percent (n)</b>
<b>Female</b>	61% (14)
<b>Previous AD experience</b>	65% (15)
<b>Working full-time in clinical practice</b>	83% (19)
<b>Type of practice</b>	
Group	78% (18)
Solo	17% (4)
Walk-in	4% (1)
<b>With university affiliation</b>	30% (7)
<b>Number of RA patients in their practice</b>	
<10	44% (10)
10 to 20	52% (12)
20 to 30	4% (1)
<b>Age, years</b>	
31 to 40	17% (4)
41 to 50	39% (9)
51 to 60	26% (6)
> 61	13% (3)

**Table 8: Survey responses**

Question	n *	Mean(SD)	Median(IQR)
1. How useful did you find the visit i.e. the discussion with the academic detailer? (1-10 scale) 1= Not at all useful, 10 = Extremely useful	23	8.3(1.6)	
2. How useful did you find the written material that the academic detailer used in his presentation? (1-10 scale) 1= Not at all useful, 10 = Extremely useful	23	8.2(1.1)	
3. How useful did you find the resource kit that was provided to you by the academic detailer? (1-10 scale) 1= Not at all useful, 10 = Extremely useful	20	8.3(1.0)	
4. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the educational value? (1-10 scale) 1= Not at all valuable, 10 = Extremely valuable	23	8.2(1.3)	
5. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the convenience? (1-10 scale) 1= Not at all convenient, 10= Extremely convenient	23		9.0(1.5)
6. Do you expect that you will change your clinical practice, i.e. how you manage patients with rheumatoid arthritis, as a result of this academic detailing visit?			
0= no, not at all	13 €		
1= Yes, a little	8.70 €		
2= Yes, a fair bit	56.50 €		
3= yes, a lot	21.70 €		
7. If you answered no to question 6, please specify why not?			
0= Information not relevant to my practice	0 €		
1= Do not agree with recommendation	0 €		
2= Information confirmed what I already do	13 €		
8. Do you feel more confident treating patients with RA as a result of the academic detailing visit? (1-10 scale) 1= Much less confident, 10= Much more confident	23		8.0(1)
9. Did you feel that the academic detailer was knowledgeable about the topic?(1-10 scale) 1= Not at all knowledgeable, 10= Extremely knowledgeable	23		9.0(2 )
10. Did the academic detailing visit meet your expectations (1-10 scale) 1=Not at all, 10= Very much so	23		9.0(2.7)
11. Did the academic detailing visit provide information which was new to you? (1-10 scale) 1=Not at all, 10= Very much so	23	6.8(2.0)	
12. How relevant to your own practice was the topic of the Academic Detailing visit (management of RA)? (1-10 scale ) 1=Not at all, 10= Very much so	19	8.3(1.7)	
13. Would you participate in academic detailing again, on another topic of interest to you? (1-10 scale) 1=Not at all likely, 10= Extremely likely	23		9(1.5)

- n= number of participants who answered this question, € = percent of participants with this response, SD = Standard deviation, IQR = Interquartile range. Values represent means and SD when the responses followed a normal distribution and median (IQR) when they were not.

**Table 9: Comparison of survey responses**

Question		AD status		University Affiliation		RA Patients	
		Yes	No	Yes	No	<10	10 to 20
1. How useful did you find the visit i.e. the discussion with the academic detailer?	Mean	8.1	8.6	8.6	8.2	7.8	8.8
2. How useful did you find the written material that the academic detailer used in his presentation?	Mean	8.1	8.3	8.4	8.1	8	8.3
3. How useful did you find the resource kit that was provided to you by the academic detailer?	Mean	8.3	8.1	8.7	8.1	8	8.5
4. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the educational value?	Mean	8.1	8.3	8.4	8.1	8	8.4
5. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the convenience?	Median	9	9.5	10	9	10	9
6. Do you expect that you will change your clinical practice, i.e. how you manage patients with rheumatoid arthritis, as a result of this academic detailing visit?	Mode	2	2	3	2	2	2
7. If you answered no to question 6, please specify why not?	Mode		2		2		2
8. Do you feel more confident treating patients with RA as a result of the academic detailing visit?	Mean	7.5	7.9	7.9	7.5	7.4	7.8
9. Did you feel that the academic detailer was knowledgeable about the topic?	Median	9	9.5	9	9	9	9.5
10. Did the academic detailing visit meet your expectations?	Median	8.5	9	8.5	9	8	9.5
11. Did the academic detailing visit provide information which was new to you?	Mean	7	6.9	6.9	7	6.6	7.3
12. How relevant to your own practice was the topic of the Academic Detailing visit (management of RA)?	Mean	7.9	8.9	8.7	8	7.7	8.8
13. Would you participate in academic detailing again, on another topic of interest to you?	Median	9	9.5	9.5	9	10	9

**Table 10: Characteristics of interview participants**

<b>Family Physicians (N=12)</b>	<b>Percent (n)</b>
<b>Female</b>	67% (8)
<b>Previous AD experience</b>	58% (7)
<b>Working full-time in clinical practice</b>	42% (11)
<b>Type of practice</b>	
Group	67% (8)
Solo	25% (3)
Walk-in	8% (1)
<b>With university affiliation</b>	33% (4)
<b>Number of RA patients in their practice</b>	
<10	50% (6)
10 to 20	50% (6)
<b>Age, years</b>	
31 to 40	8% (1)
41 to 50	50% (6)
51 to 60	25% (3)
> 60	17% (2)

**Table 11: Comparison of survey responses**

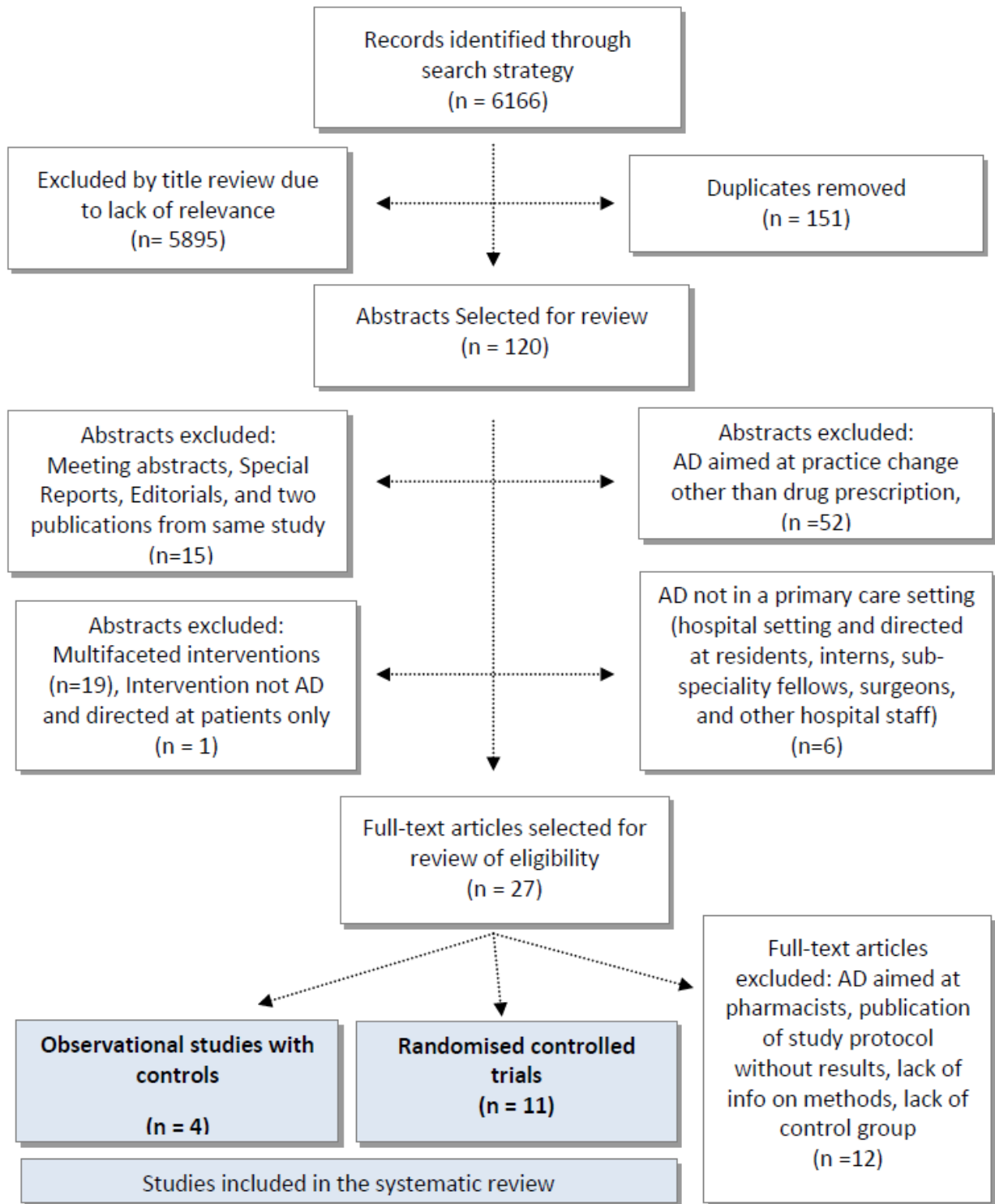
Question		Interview status	
		Yes	No
1. How useful did you find the visit i.e. the discussion with the academic detailer?	Mean	8.5	8.1
2. How useful did you find the written material that the academic detailer used in his presentation?	Mean	8.6	7.7
3. How useful did you find the resource kit that was provided to you by the academic detailer?	Mean	8.4	8
4. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the educational value?	Mean	8.4	7.9
5. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of the convenience?	Median	8.4	9
6. Do you expect that you will change your clinical practice, i.e. how you manage patients with rheumatoid arthritis, as a result of this academic detailing visit?	Mode	8	2
7. If you answered no to question 6, please specify why not?	Mode	8.4	#N/A
8. Do you feel more confident treating patients with RA as a result of the academic detailing visit?	Mean	8.3	7.5
9. Did you feel that the academic detailer was knowledgeable about the topic?	Median	8.4	8
10. Did the academic detailing visit meet your expectations?	Median	8.4	8
11. Did the academic detailing visit provide information which was new to you?	Mean	8.4	7.3
12. How relevant to your own practice was the topic of the Academic Detailing visit (management of RA)?	Mean	8.4	7.9
13. Would you participate in academic detailing again, on another topic of interest to you?	Median	0	9.5



**Table 12: Themes and categories**

Themes	Categories
1. Valued Features of AD	a. Convenience of AD Scheduling Duration Location b. One-on-one The Opportunity to ask questions The Opportunity to bring own examples Ability to focus on your information needs
2. Utility of Content	a. New Content b. Practical information c. Evidence- based, Summarised and Synthesised information d. Relevance of Content to practice e. Underlying needs and expectations f. Pharmacist as Academic Detailer Acceptability Advantages and limitations of the Pharmacist as Academic Detailer
3. Disadvantages of AD	a. Challenges incorporating CME into clinic schedule b. Delivering standardised message c. Providing content which was not new to some FPs d. Practical issues with using material after the AD visit
4. Outcomes of AD visit	a. Improved Confidence b. Anticipated Practice Changes c. Expressions of Willingness to receive AD in future d. Most important/valuable message learnt from this visit

**Figure 1: Flow diagram of studies identified in systematic review**



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## APPENDIX A: Supplementary material for chapter 2

### Search Strategy for systematic review from MEDLINE

Database: Ovid MEDLINE(R) 1948 to Present with Daily Update

Search Strategy:

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- 1 academic detailing.mp. (235)
- 2 exp Education, Medical, Continuing/ (18168)
- 3 academically based detailing.mp. (1)
- 4 continuing medical education.mp. (3272)
- 5 public interest detailing.mp. (1)
- 6 educational outreach.mp. (189)
- 7 or/1-6 (19448)
- 8 physician?.mp. (331085)
- 9 exp Physicians/ (71460)
- 10 general practitioner?.mp. (29390)
- 11 family practice.mp. (58253)
- 12 family doctor?.mp. (2983)
- 13 primary health care provider?.mp. (368)
- 14 general practice.mp. (27421)
- 15 or/8-14 (396198)
- 16 practice pattern?.mp. (34391)
- 17 drug prescription?.mp. (19893)
- 18 or/16-17 (51733)
- 19 exp Primary Health Care/ (61201)
- 20 7 and 15 (7881)
- 21 7 and 18 (1192)
- 22 7 and 18 and 19 (115)
- 23 21 or 22 (1192)
- 24 comment/ or editorial/ or letter/ (1027486)
- 25 23 not 24 (1100)
- 26 25 (1100)
- 27 limit 26 to yr="1983 - 2010" (1071)
- 28 limit 27 to english language (1009)
- 29 group detailing.mp. (6)
- 30 or/1-6,29 (19451)
- 31 antibiotic prescribing.mp. (859)
- 32 drug dosage calculation?.mp. (366)
- 33 or/16-17,31-32 (52430)
- 34 15 and 30 (7882)
- 35 30 and 33 (1202)
- 36 19 and 30 and 33 (117)
- 37 35 or 36 (1202)

38 comment/ or editorial/ or letter/ (1027486)  
39 37 not 38 (1110)  
40 39 (1110)  
41 limit 40 to yr="1983 - 2010" (1081)  
42 41 (1081)  
43 limit 42 to english language (1018)  
44 academic detailing.mp. (235)  
45 exp Education, Medical, Continuing/ (18168)  
46 academically based detailing.mp. (1)  
47 continuing medical education.mp. (3272)  
48 public interest detailing.mp. (1)  
49 educational outreach.mp. (189)  
50 group detailing.mp. [mp=protocol supplementary concept, rare disease supplementary  
concept, title, original title, abstract, name of substance word, subject heading word, unique  
identifier] (6)  
51 or/44-50 (19451)  
52 physician?.mp. (331085)  
53 exp Physicians/ (71460)  
54 general practitioner?.mp. (29390)  
55 family practice.mp. (58253)  
56 family doctor?.mp. (2983)  
57 primary health care provider?.mp. (368)  
58 general practice.mp. (27421)  
59 or/52-58 (396198)  
60 practice pattern?.mp. (34391)  
61 drug prescription?.mp. (19893)  
62 antibiotic prescribing.mp. [mp=protocol supplementary concept, rare disease  
supplementary concept, title, original title, abstract, name of substance word, subject heading  
word, unique identifier] (859)  
63 drug dosage calculation?.mp. [mp=protocol supplementary concept, rare disease  
supplementary concept, title, original title, abstract, name of substance word, subject heading  
word, unique identifier] (366)  
64 exp drug prescriptions/ (19455)  
65 or/60-64 (52688)  
66 exp Primary Health Care/ (61201)  
67 51 and 59 (7882)  
68 51 and 65 (1202)  
69 51 and 66 (698)  
70 exp Physician's Practice Patterns/ (31199)  
71 51 and 70 (971)  
72 or/67-69,71 (8144)  
73 Randomized Controlled Trials as Topic/ (69397)  
74 randomized controlled trial/ (294733)  
75 Random Allocation/ (69308)  
76 Double Blind Method/ (106586)  
77 Single Blind Method/ (14322)  
78 clinical trial/ (453781)  
79 clinical trial, phase i.pt. (10662)

80 clinical trial, phase ii.pt. (16923)  
81 clinical trial, phase iii.pt. (5718)  
82 clinical trial, phase iv.pt. (568)  
83 controlled clinical trial.pt. (80675)  
84 randomized controlled trial.pt. (294733)  
85 multicenter study.pt. (123546)  
86 clinical trial.pt. (453781)  
87 exp Clinical Trials as topic/ (232959)  
88 or/73-87 (822716)  
89 (clinical adj trial\$.tw. (146814)  
90 ((singl\$ or doubl\$ or treb\$ or tripl\$) adj (blind\$3 or mask\$3)).tw. (103898)  
91 PLACEBOS/ (28802)  
92 placebo\$.tw. (124105)  
93 randomly allocated.tw. (12102)  
94 (allocated adj2 random\$.tw. (14290)  
95 or/89-94 (311957)  
96 or/88,95 (913132)  
97 case report.tw. (152577)  
98 letter/ (691819)  
99 historical article/ (266459)  
100 or/97-99 (1101460)  
101 96 not 100 (887935)  
102 Epidemiologic studies/ (4815)  
103 exp case control studies/ (480267)  
104 exp cohort studies/ (1049644)  
105 Case control.tw. (51958)  
106 (cohort adj (study or studies)).tw. (48704)  
107 Cohort analy\$.tw. (2310)  
108 (Follow up adj (study or studies)).tw. (30291)  
109 (observational adj (study or studies)).tw. (24300)  
110 Longitudinal.tw. (95060)  
111 Retrospective.tw. (183214)  
112 Cross sectional.tw. (102110)  
113 Cross-sectional studies/ (116928)  
114 or/102-113 (1389888)  
115 or/101,114 (2070564)  
116 72 and 115 (1213)  
117 comment/ or editorial/ or letter/ (1027486)  
118 116 not 117 (1191)  
119 limit 118 to yr="1983 - 2010" (1170)  
120 limit 119 to english language (1091)  
121 academic detailing.mp. (235)  
122 exp Education, Medical, Continuing/ (18168)  
123 academically based detailing.mp. (1)  
124 continuing medical education.mp. (3272)  
125 public interest detailing.mp. (1)  
126 educational outreach.mp. (189)  
127 or/121-126 (19448)

128 physician?.mp. (331085)  
129 exp Physicians/ (71460)  
130 general practitioner?.mp. (29390)  
131 family practice.mp. (58253)  
132 family doctor?.mp. (2983)  
133 primary health care provider?.mp. (368)  
134 general practice.mp. (27421)  
135 or/128-134 (396198)  
136 practice pattern?.mp. (34391)  
137 drug prescription?.mp. (19893)  
138 or/136-137 (51733)  
139 exp Primary Health Care/ (61201)  
140 127 and 135 (7881)  
141 127 and 138 (1192)  
142 127 and 138 and 139 (115)  
143 141 or 142 (1192)  
144 comment/ or editorial/ or letter/ (1027486)  
145 143 not 144 (1100)  
146 145 (1100)  
147 limit 146 to yr="1983 - 2010" (1071)  
148 limit 147 to english language (1009)  
149 group detailing.mp. (6)  
150 or/121-126,149 (19451)  
151 antibiotic prescribing.mp. (859)  
152 drug dosage calculation?.mp. (366)  
153 or/136-137,151-152 (52430)  
154 135 and 150 (7882)  
155 150 and 153 (1202)  
156 139 and 150 and 153 (117)  
157 155 or 156 (1202)  
158 comment/ or editorial/ or letter/ (1027486)  
159 157 not 158 (1110)  
160 159 (1110)  
161 limit 160 to yr="1983 - 2010" (1081)  
162 161 (1081)  
163 limit 162 to english language (1018)  
164 academic detailing.mp. (235)  
165 exp Education, Medical, Continuing/ (18168)  
166 academically based detailing.mp. (1)  
167 continuing medical education.mp. (3272)  
168 public interest detailing.mp. (1)  
169 educational outreach.mp. (189)  
170 group detailing.mp. [mp=protocol supplementary concept, rare disease supplementary  
concept, title, original title, abstract, name of substance word, subject heading word, unique  
identifier] (6)  
171 or/164-170 (19451)  
172 physician?.mp. (331085)  
173 exp Physicians/ (71460)

174 general practitioner?.mp. (29390)  
175 family practice.mp. (58253)  
176 family doctor?.mp. (2983)  
177 primary health care provider?.mp. (368)  
178 general practice.mp. (27421)  
179 or/172-178 (396198)  
180 practice pattern?.mp. (34391)  
181 drug prescription?.mp. (19893)  
182 antibiotic prescribing.mp. [mp=protocol supplementary concept, rare disease  
supplementary concept, title, original title, abstract, name of substance word, subject heading  
word, unique identifier] (859)  
183 drug dosage calculation?.mp. [mp=protocol supplementary concept, rare disease  
supplementary concept, title, original title, abstract, name of substance word, subject heading  
word, unique identifier] (366)  
184 exp drug prescriptions/ (19455)  
185 or/180-184 (52688)  
186 exp Primary Health Care/ (61201)  
187 171 and 179 (7882)  
188 171 and 185 (1202)  
189 171 and 186 (698)  
190 exp Physician's Practice Patterns/ (31199)  
191 171 and 190 (971)  
192 or/187-189,191 (8144)  
193 Randomized Controlled Trials as Topic/ (69397)  
194 randomized controlled trial/ (294733)  
195 Random Allocation/ (69308)  
196 Double Blind Method/ (106586)  
197 Single Blind Method/ (14322)  
198 clinical trial/ (453781)  
199 clinical trial, phase i.pt. (10662)  
200 clinical trial, phase ii.pt. (16923)  
201 clinical trial, phase iii.pt. (5718)  
202 clinical trial, phase iv.pt. (568)  
203 controlled clinical trial.pt. (80675)  
204 randomized controlled trial.pt. (294733)  
205 multicenter study.pt. (123546)  
206 clinical trial.pt. (453781)  
207 exp Clinical Trials as topic/ (232959)  
208 or/193-207 (822716)  
209 (clinical adj trial\$.tw. (146814)  
210 ((singl\$ or doubl\$ or treb\$ or tripl\$) adj (blind\$3 or mask\$3)).tw. (103898)  
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212 placebo\$.tw. (124105)  
213 randomly allocated.tw. (12102)  
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215 or/209-214 (311957)  
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217 case report.tw. (152577)

218 letter/ (691819)  
219 historical article/ (266459)  
220 or/217-219 (1101460)  
221 216 not 220 (887935)  
222 Epidemiologic studies/ (4815)  
223 exp case control studies/ (480267)  
224 exp cohort studies/ (1049644)  
225 Case control.tw. (51958)  
226 (cohort adj (study or studies)).tw. (48704)  
227 Cohort analy\$.tw. (2310)  
228 (Follow up adj (study or studies)).tw. (30291)  
229 (observational adj (study or studies)).tw. (24300)  
230 Longitudinal.tw. (95060)  
231 Retrospective.tw. (183214)  
232 Cross sectional.tw. (102110)  
233 Cross-sectional studies/ (116928)  
234 or/222-233 (1389888)  
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236 192 and 235 (1213)  
237 comment/ or editorial/ or letter/ (1027486)  
238 236 not 237 (1191)  
239 limit 238 to yr="1983 - 2010" (1170)  
240 limit 239 to english language (1091)

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Title

Reducing suicides through an alliance against depression?.

Source

General Hospital Psychiatry. 32(5):514-8, 2010 Sep-Oct.

MeSH Subject Headings

\*Cooperative Behavior

Depressive Disorder/di [Diagnosis]

Depressive Disorder/px [Psychology]



\*Depressive Disorder/th [Therapy]  
Education, Medical, Continuing  
Female  
Forecasting  
General Practice/ed [Education]  
Germany  
Health Promotion/td [Trends]  
Humans  
\*Interdisciplinary Communication  
Male  
\*Patient Care Team  
Prospective Studies  
Sex Factors  
\*Suicide/pc [Prevention & Control]  
Suicide/px [Psychology]  
Suicide/td [Trends]

## Quality Assessment Form for Randomized Control Trials

<b>Section 1: Study information</b>		
<b>Study Title</b>		
<b>First Author</b>		
<b>Country where study was conducted</b>		
<b>Year of Publication</b>		
<b>Journal</b>		
<b>Reviewer</b>		
<b>Section 2: Quality Assessment</b>		
Item No.	Item Description	Scores
1	Objectives/hypotheses	0= Not stated , 1= stated, but not clearly , 2 = well described
2	Study design	0= Not stated , 1= not clearly Stated, 2 = well described
3	Study Design appropriate for objectives of the study	0 = No, 1 = Yes
4	Individuals selected to participate in the study likely to be representative of the target population	0= No, 1=somewhat, 2 = Yes
5	Eligibility criteria for participants well described and appropriate for study objective	0= No , 1= not clear , 2 = yes
6	Type of randomization appropriate and well described	0= No, 1= not clear, 2 = Yes
7	Unit of randomization appropriate and well described	0= No , 1 = not clear, 2 = yes
8	Unit of analysis appropriate and well described	0= No , 1 = not clear, 2 = yes
9	Proportion of eligible providers that participated in the study (participation rate)	0 = Not stated, 1= less than 80%, 2 = 80 – 100%
10	Proportion of randomized providers that received intervention(intervention rate)	0 = Not stated, 1= less than 80%, 2 = 80 – 100%
11	Concealment of allocation was appropriate and well described. Allocation is considered appropriately concealed if the unit of allocation was by institution, team or professional and allocation was performed on all units at the start of the study; or if the unit of allocation was by patient or episode of care and there was some form of centralized randomization scheme, an on-site computer system or sealed opaque envelopes were used	0= No, 1 = not clear 2 = yes
12	Generation of allocation sequence is appropriate (random component in the sequence generation process is described) and well described	0 = No , 1 = Not clear , 2 = Yes

## Quality Assessment Form for Randomized Control Trials

13	Baseline characteristics, including baseline measures of outcome prior to intervention , are described and equivalent in both study groups	0 = Not stated, 1 = Important differences between the groups not adjusted for in the analyses , 2 =Baseline characteristics were similar between two study groups or appropriate adjusted analyses were performed to address any differences in the baseline measurement of outcome
14	Number of participants in the intervention group and control group was stated	0= Not stated , 1= not clearly stated , 2 = Stated
15	Intervention for each group is clearly described and follows principles of academic detailing	0 = No, 1= Somewhat, 2 = Yes
16	Intervention provided in participant 's office setting	0= No , 1= Not clear , 2 = Yes
17	Participants received an unintended intervention (contamination or co-intervention) that may influence the results	0= Yes , 1= Cant tell , 2= No
18	Was standardization of intervention ensured and described (e.g. providing training of academic detailers; auditing of some visits)	0 = No , 1= somewhat, 2 = Yes
19	Intervention provider information (who was the academic detailer)	0= Not stated , 1= Stated
20	Target behavior for intervention	0 = not stated, 1 = stated
21	Follow-up of study participants (Family physicians or patients)	0= Not stated , 1 = outcome measures obtained for less than 80% of randomized subjects, 2 = outcome measures obtained for > = 80% of randomized subjects
22	Time and description of outcomes data assessment stated, described and appropriate for study objectives	0= No , 1= not clearly Stated, 2 = Yes
23	Sample size and power calculation described and provide adequate power to detect clinically important differences.	0 = No , 1 = somewhat , 2 = Yes
24	Statistical tests appropriate to design of the study and data	0 =No , 1= somewhat, 2 = Yes
25	Number of Withdrawals and drop-outs reported and appropriate	0 = Not stated , 1 = more than 80%, 2= less than 80%
26	Number of participants in each group for analysis and whether the analysis was by original assigned group(ITT)	0= Not stated , 1= not clearly Stated, 2 = well described

## Quality Assessment Form for Randomized Control Trials

27	Missing data described and handled appropriately	0= Not stated, 1= Missing outcome data likely to cause bias in results, 2= Proportion of Missing outcome data was similar in both the study groups or it was less than the effect size
28	For each outcome, results for each group and estimated effect size and its precision(CI) stated	0= Not stated , 1= not clearly Stated, 2 = well described
29	Conclusion of the study stated and appropriate for study design and results.	0= Not stated , 1= not clearly Stated, 2 = well described
<b>Final quality assessment score</b>		<b>/55</b>

**Notes:**

**Answer key in general for all the questions**

**0 = not done or not described**

**1= not clearly described or not done completely**

**2= well described and well done**

## Quality Assessment Form for Observational Studies

<b>Section1: Study information</b>		
<b>Study Title</b>		
<b>First Author</b>		
<b>Year of Publication</b>		
<b>Journal</b>		
<b>Country where study was conducted</b>		
<b>Reviewer</b>		
<b>Section 2: Quality Assessment</b>		
<b>Item No.</b>	<b>Item Description</b>	<b>Score</b>
1	Objectives/hypotheses	0= Not stated , 1= stated, but not clearly , 2 = Yes
2	Study design	0= Not stated , 1= stated, but not clearly , 2 = well described
3	Study design appropriate for objective of study	0 = No, 1 = Yes
4	Relevant dates for the periods of recruitment and intervention provided	0= No , 1= not clear , 2 = yes
5	Location and setting for data collection	0= No , 1= not clear , 2 = yes
6	Individuals selected to participate in the study likely to be representative of the target population	0= No, 1=somewhat, 2 = Yes
7	Eligibility, Methods and rationale of case ascertainment described and appropriate for study objectives	0= No , 1= not clear , 2 = yes
8	Eligibility, Methods and rationale of control selection described and appropriate	0= No , 1= not clear , 2 = yes
9	Control and intervention group are similar in terms of baseline characteristics, potential confounders and baseline rates of outcome prior to intervention.	0= No , 1= not clear , 2 = yes
10	Intervention is clearly described and followed principles of Academic detailing	0= No , 1= not clear , 2 = yes
11	Outcomes described and appropriate for study objective	0= No , 1= not clear , 2 = yes
12	Assessment of primary/secondary outcomes described and are appropriate for the outcomes selected	0= No , 1= not clear , 2 = yes
13	Attempts to identify and control for Potential confounders, identify and describe effect modifiers described	0= No , 1= not clear , 2 = yes
14	Efforts to address potential sources of bias	0= No , 1= not clear , 2 = yes
15	Unit of analysis appropriate and well described	0= No , 1 = not clear, 2 = yes
16	Proportion of eligible providers that received the intervention?	0 = Not stated, 1= less than 80%, 2 = 80 – 100%
17	Intervention provided in participant 's office setting	0= No , 1= Not clear , 2 = Yes
18	Participants received an unintended intervention (contamination or co-intervention) that may influence the results	0= Yes , 1= Can't tell , 2= No

### Quality Assessment Form for Observational Studies

19	Sample size and power calculation clearly described and power was adequate	0= No , 1= not clear , 2 = yes
20	Was standardization of intervention ensured and described (e.g. providing training of academic detailers; auditing of some visits)	0 = No , 1= somewhat, 2 = Yes
21	Intervention provider information (who was the academic detailer)	0= Not stated , 1= Stated
22	Target behavior for intervention	0 = not stated, 1 = stated
23	Statistical tests including methods to control for confounding described and appropriate for design of the study and data	0= Not stated , 1= stated, but not clearly , 2 = Yes
24	Follow-up of Family physicians	0= Not stated , 1 = outcome measures obtained for less than 80% of randomized subjects, 2 = outcome measures obtained for > = 80% of randomized subjects
25	Time and description of outcomes data assessment stated, described and appropriate for study objectives	0= No , 1= not clearly Stated, 2 = Yes
26	Missing data handled appropriately and described	0= Not stated , 1= stated, but not clearly , 2 = Yes
27	Number of Withdrawals and drop outs reported and appropriate	0= Not stated , 1= more than 80% , 2 = less than 80%
28	Participant flow clearly provided at each stage of the study including eligibility for recruitment, confirmed eligibility, included in the study, completing follow-up and analyzed	0= Not stated , 1= stated, but not clearly , 2 = Yes
29	Baseline demographic and clinical characteristics given for all the participants including information on intervention, potential contamination or co-intervention and potential confounders	0= Not stated , 1= stated, but not clearly , 2 = Yes
30	Outcome data provided for intervention and control groups	0= No, 1= not clearly Stated, 2 = Yes
31	Unadjusted estimates given and if applicable confounder adjusted estimates and 95% CI given	0= Not stated , 1= not clearly Stated, 2 = Yes
32	Conclusion of the study stated and appropriate for study design and results.	0= Not stated , 1= not clearly Stated, 2 = Yes
<b>Final quality assessment score</b>		<b>/61</b>

**Notes:**

**Answer key in general for all the questions**

**0 = not done or not described**

**1= not clearly described or not done completely**

## APPENDIX B: Supplementary material for chapter 3



### Optimizing Care for RA: Family Physician Academic Detailing Visit



#### Feedback Survey

#### Thinking about the recent academic detailing visit you had on rheumatoid arthritis–

1. How useful did you find the visit i.e. the discussion with the academic detailer?

1 2 3 4 5 6 7 8 9 10

Not At

Extremely

All Useful

Useful

2. How useful did you find the written material that the academic detailer used in his presentation?

1 2 3 4 5 6 7 8 9 10

Not At

Extremely

All Useful

Useful

3. How useful did you find the resource kit that was provided to you by the academic detailer?

I cannot answer; I have not looked at it yet

1 2 3 4 5 6 7 8 9 10

Not At

Extremely

All Useful

Useful

#### Thinking about the recent academic detailing visit you had on rheumatoid arthritis–

4. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of:

Educational Value

1 2 3 4 5 6 7 8 9 10

Not At

Extremely

All Valuable

Valuable

5. How would you rate the face-to-face academic detailing visit in your office compared to other CME methods (e.g. attending conferences, online CME activities) in terms of:

Convenience

1 2 3 4 5 6 7 8 9 10

Not At All

Extremely

Convenient

Convenient

6. Do you expect that you will change your clinical practice, i.e. how you manage patients with rheumatoid arthritis, as a result of this academic detailing visit?

0 1 2 3

No, not at all

Yes, a little

Yes, a fair bit

Yes, a lot

7. If you answered no, please specify why not?

0  The information was not relevant to my practice

1  I don't agree with the recommendations presented

2  The information confirmed what I already do

3  Other, please specify \_\_\_\_\_

## Optimizing Care for RA: Family Physician Academic Detailing Visit

### Feedback Survey

8. Do you feel more confident treating patients with RA as a result of the academic detailing visit?

1 2 3 4 5 6 7 8 9 10

Much Less  
Confident

Much More  
Confident

9. Did you feel that the academic detailer was knowledgeable about the topic?

1 2 3 4 5 6 7 8 9 10

Not At All  
Knowledgeable

Extremely  
Knowledgeable

10. Did the academic detailing visit meet your expectations?

1 2 3 4 5 6 7 8 9 10

Not At All

Very much so

11. 9. Did the academic detailing visit provide information which was new to you?

1 2 3 4 5 6 7 8 9 10

Not at all

Very much so

12. 10. How relevant to your own practice was the topic of the Academic Detailing visit (management of RA)?

1 2 3 4 5 6 7 8 9 10

Not at all

Very much so

13. 11. Would you participate in academic detailing again, on another topic of interest to you?

1 2 3 4 5 6 7 8 9 10

Not at all  
likely

Extremely  
likely

14. 12. Please provide any additional comments you have about the utility of the academic detailing visit you received on the management of rheumatoid arthritis.

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### To help us interpret results from this survey, we wish to also ask you questions about your practice.

1. Are you a full-time or part-time practitioner?  Full-Time  Part-Time
2. Are you in a group practice or solo practice?  Group  Solo  Walk-In
3. Are you affiliated with a university?  Yes  No
4. How many RA patients do you have in your practice?  <10  10 – 20  20- 30  
 >30
5. Have you had academic detailing visits in the past?  Yes  No  
If yes, was it part of the initiative of BC Provincial Academic Detailing (PAD) Service?
- Yes  No
6. Sex  Male  Female
7. Age  < 30  31 -40 yrs  41 - 50 yrs  51 – 60 yrs  > 60 yrs

Thank you for filling out the survey.  
Please fax the completed survey to (604) 879-3791



## APPENDIX C: Supplementary material for chapter 4



Optimizing Care for RA: Family Physician Academic Detailing Visit.



### Physician Telephone Semi-structured Interview Questions

*Introduction: “Hello XXX , How are you today? My name is Harpreet Chhina. I am UBC Master’s student in Experimental Medicine, Faculty of Medicine. I am conducting this interview as a part of data collection for my thesis. Our interview is intended to help understand the perceptions of family physicians about the acceptability and usefulness of academic detailing as a way of providing information to family physicians about the management of rheumatoid arthritis.*

*Before we begin the interview today, I would like to remind you that this interview will be recorded but all the information gathered will be kept confidential. The interview will last approximately 20- 30 minutes.”*

Grand Tour Question: Can you briefly describe the academic detailing visit you had on management of Rheumatoid Arthritis?

*Note: questions are labelled as A or U, depending on whether they are asking about acceptability (A), or usefulness (U)*

1. Did you find academic detailing different from other CME activities to provide information

about the management of rheumatoid arthritis?

Probe: If so, how?

Probe: What kind of other CME activity did you have in mind when you compared it to academic detailing? What were the advantages of academic detailing over other types of CME activities?

2. What were any disadvantages of academic detailing compared with other types of CME

activities? **U**

Probe: What kind of other CME activity did you have in mind when you compared it to

academic detailing? (Ask only once, either at Q1 or Q3)?

3. What features of academic detailing did you find valuable for managing patients with RA? **U**

Floating Probe: Can you expand a little on this? If needed, ask about different aspects (e.g. has it improved your knowledge? Your confidence or comfort with managing RA?)

4. What features of academic detailing did you find less useful? **U**

Probe: Can you tell me why you found these features less useful?

5. How did you find having a pharmacist discussing the medical management of RA with you?

**Probe:** Were you comfortable with the fact that it was a pharmacist? Why or why not?

6. a) Would you have preferred to have a different health professional providing the academic detailing?

b) And if so, who and why? **A**

7. a) Would you be willing to participate again in academic detailing in the future?

b) If yes, why? If no, why not? **A**

8. What was the most important thing you learned about RA management from this experience? **U**

9. Do you think you will change your current practice about the management of RA, as a result of the academic detailing?

b) And if so, what do you anticipate this change will be? **U**

Probe: Can you give some examples of this change?

c) If not, why not?

Probe: Is it because the information confirmed what you already knew and is it because you

don't agree with what was recommended? Is it because you don't see RA patients?

What are some other reasons?

10. Do you have any suggestions to make academic detailing about rheumatoid arthritis a better experience? **A**

11. Is there anything else you would like to tell me about your experience with academic detailing for the management of rheumatoid arthritis?

**Concluding Remarks:** Thank you for your time and sharing your views on this important topic with me.