

## APPENDIX A. SEARCH STRATEGIES

### FINAL SEARCH STRATEGY

#### **CINAHL search (starting in 2005, conducted on 9/19/2016)**

((MH "Group Practice+" (exploded) OR "group practice") AND manag\*) OR MH "Private Practice Management" OR MH "Practice Management Information Systems" OR "practice management" as keyword

AND

MH "Health Services Accessibility+"(Exploded) OR (health\* AND service\* AND access\*)

Limited to English only and from 2005-2016

#### **PubMed (starting in 2005, conducted on 3/3/2016)**

("Group Practice"[Mesh] OR group practice\*[tiab] AND (management[mh] OR management[tiab] OR manages[tiab] OR managing[tiab] OR manage[tiab]))

OR

"Group Practice/organization and administration"[Mesh]

OR

"Practice Management"[Mesh] OR practice manag\*[tiab]

AND

"Health Services Accessibility"[Mesh] OR access[ti] OR accessing[ti] OR accessed[ti] OR accessib\*[ti]

English only

### REJECTED SEARCH STRATEGIES

#### **PubMed, limited to English language (starting in 2000, conducted on 10/11/2016)**

((primary health care[mh] OR primary care[tiab]) AND practice[tiab]) OR family practice[mh] OR "family practice"[tiab]

AND

"Health Services Accessibility"[Mesh] OR access[tiab] OR accessing[tiab] OR accessed[tiab] OR accessib\*[tiab]

AND

organization\*[tiab] or (organization and administration[sh]) OR management[majr] OR management[tiab] or manages[tiab] OR managing[tiab] OR manage[tiab]

This search generated 3,718 citations. In a sample of 500 no potential include citations were identified.

This same search was re-run after removing the terms:

((primary health care[mh] OR primary care[tiab]) AND practice[tiab]) OR family practice[mh]  
OR "family practice"[tiab]

This search generated over 100,000 citations. Screening this many titles would not be feasible.

## APPENDIX B. CRITERIA USED IN QUALITY ASSESSMENT

NOTE: For this review we modified the criteria below by removing the health outcomes domain (#11, in grey and italics). Included interventions were only scored a maximum of 15 as a result.

Domain	Minimum standard	Score
<b>1. Organizational Motivation: Organizational problem, reason, or motivation for the intervention</b> <input type="checkbox"/> Consider quality of care problems; organizational problems; regulations, legal constraints, and external financial incentives at the target organization; or organizational motivation.	Names or describes at least one motivation for the organization's participation in the intervention	Not met Met
<b>2. Intervention Rationale: Rationale linking the intervention to its expected effects</b> <input type="checkbox"/> Consider citations of theories, logic models, or existing empirical evidence that links the intervention to its expected effects.	Names or describes a rationale linking at least one central intervention component to intended effects	Not met Met
<b>3. Intervention Description: Change in organizational or provider behavior</b> <input type="checkbox"/> Consider the presented details that describe the change in the delivery of care, provider behavior, or structure of the organization needed to replicate the evaluated intervention including the involved key personnel.	Describes at least one specific change in detail including the personnel executing the intervention	Not met Met
<b>4. Organizational Characteristics: Demographics or basic characteristics of the organization</b> <input type="checkbox"/> Consider environment (eg, urban/rural, academic/non-academic), type of care (eg, primary care), size of the organization, patient mix, staff mix, or reimbursement type.	Reports at least 2 organizational characteristics	Not met Met
<b>5. Implementation: Temporary activities used to introduce potentially enduring changes</b> <input type="checkbox"/> Consider types of staff involved, activities or methods used such as pilot testing or Plan-Do-Study-Act (PDSA) cycles, staff education, and involvement of stakeholders in introducing the intervention.	Names at least one approach used to introduce the intervention	Not met Met
<b>6. Study Design: Study design and comparator</b> <input type="checkbox"/> Consider the type of evaluation (eg, post-only, pre-post, time series, parallel control group, randomized groups; same participants assessed multiple times or different samples) / how the authors evaluated whether the intervention worked	Names the study design	Not met Met
<b>7. Comparator: Information about comparator care processes</b> <input type="checkbox"/> Consider details about the control group or the status quo without the intervention (even if there was no formal control group / data), eg, the existing standard of care / routine care / before the intervention was introduced, or care processes used in the control group.	Describes at least one key care process	Not met Met

<p><b>8. Data Source: Data source and outcome definition</b>  <input type="checkbox"/> Consider the data sources (eg, routine hospital data, data collected by the study investigator), the data collection method (eg, survey, interview, objective/subjective measurement) and the outcome of interest is defined (eg, definition of a reportable patient fall).</p>	Describes the data source and defines the outcome of interest	Not met Met
<p><b>9. Timing: Timing of intervention and evaluation</b>  <input type="checkbox"/> Consider the clarity of the timeline of the intervention, eg, when introduced, when fully implemented, when evaluated relative to the intervention implementation status, and a clear indication of whether baseline data (defined as before the intervention was introduced) was present.</p>	Describes the timing of the intervention and evaluation to determine the presence of baseline data and the followup period after all intervention components were fully implemented	Not met Met
<p><b>10. Adherence / Fidelity: Adherence to the intervention</b>  <input type="checkbox"/> Consider reporting of compliance with the intervention for the duration of the study, fidelity data on intervention use, or described mechanisms that ensures compliance (eg, provider reminder integrated in electronic health record that cannot be skipped).</p>	Reports fidelity information for at least one intervention component, or describes evidence of adherence or a mechanism ensuring compliance to the intervention	Not met Met
<p><b>11. Health Outcomes: Patient health-related outcomes</b>  <input type="checkbox"/> Consider patient and non-professional care-giver health-related outcomes (including eg, quality of life), but exclude satisfaction, provider-behavior (eg, number of diagnostic tests ordered, knowledge) and process improvements.</p>	<i>Reports data on at least one health-related outcome</i>	<i>Not met Met</i>
<p><b>12. Organizational Readiness: Barriers and facilitators to readiness</b>  <input type="checkbox"/> Consider reported QI resources and culture (eg, existing QI committee, leadership commitment, prior QI experience, staff attitudes, and education and decision support resources) and results of barriers and facilitator assessments.</p>	Reports at least one organizational-level barrier or facilitator	Not met Met
<p><b>13. Penetration / Reach: Penetration / reach of the intervention</b>  <input type="checkbox"/> Consider the number of units or sites participating in the intervention compared to the available / eligible units (eg, the number of participating sites without knowing how many sites were initially approached / were eligible is not sufficient).</p>	Describes the proportion of all eligible units who actually participated	Not met Met
<p><b>14. Sustainability: Sustainability of the intervention</b>  <input type="checkbox"/> Consider discussions of sustainability, reference to organizational resources (eg, costs and necessary commitments) and policy changes needed to sustain the intervention after withdrawal of study personnel and research resources, evidence of enduring changes (eg, automated electronic reminders), or an extended duration of the intervention period as evidence of sustainability.</p>	Describes the sustainability or the potential for sustainability	Not met Met
<p><b>15. Spread: Ability to be spread or replicated</b></p>	Describes the potential for	Not met

<input type="checkbox"/> Consider evidence of spread or failure to spread and large rollouts; available resources such as a toolkits, how-to manuals, protocols, or booklets that describe the intervention in detail and could facilitate spread and replication; or discussions of spread potential.	spread, existing tools for spread, or spread attempts / large-scale rollout	Met
<p><b>16. Limitations: Interpretation of the evaluation</b></p> <input type="checkbox"/> Consider whether the interpretation of the reported findings takes the study design (eg, the lack of comparator) or other evaluation limitations into account; refers to the presented data (not future research / developments or intervention limitations)	Reports at least one limitation of the design / evaluation	Not met Met

Note: QI = Quality improvement. The intervention and the outcome of interest need to be determined before scoring.

## APPENDIX C. PEER REVIEW COMMENTS/AUTHOR RESPONSES

Comment	Response
<p>Although ref 41 describes VA's ACA initiative, the publication is an abbreviated version of the complete report which is readily available.  <a href="http://www.researchgate.net/publication/228478818">http://www.researchgate.net/publication/228478818</a>                      This report has much more detail re: context.</p>	<p>We actually used the full report but erroneously cited the abbreviated version. This has been corrected.</p>
<p>There are additional modeling studies that are relevant, eg, Robinson LW, Chen RR. A comparison of traditional and open-access policies for appointment scheduling. <i>Manufacturing &amp; Service Operations Management</i> 2010;12;330-346.</p>	<p>We have now included this in our modeling studies section, our search did not identify this article.</p>
<p>There is much going on in the world of improving access than is reflected in the academic literature. For example, the Cleveland Clinic made 1.3 million same day appointments in 2016 and it is possible to get a same day or next day appointment with a specialist - maybe not the individual you wanted, maybe not in the most convenient location, and maybe with a relevant specialty but not the one requested, eg, seeing a neurologist for headache when you asked for a neurosurgeon. I am unaware that this has been published in any academic literature and it may not stand up to scrutiny if evaluated carefully, but this type of information would still be informative. There are almost certainly many other similar efforts going on.</p>	<p>We agree that the possibility of publication bias in this literature review is a limitation, and cite this example when we discuss this issue.</p>
<p>Take a closer look at CAHPS literature (both peer reviewed and 'gray') to see usefulness of patient self report as an access measure.</p>	<p>We asked the Principal Investigator of CAHPS (Marc Elliott) for this information and he identified the 2 citations we included. This topic is not a specific key question for this report and we therefore did not do a systematic search on it, but trust the CAHPS PI to identify the relevant research.</p>
<p>What about use of "Secret Shopper calls" - a technique used by McWilliams to assess ACOs and by the California Health Foundation in a recent report?</p>	<p>This comment is about methods for evaluating access, and that was not the subject of our search, which was about actual evaluations, meaning we are limited to studies evaluating access management interventions. In the included studies, the evaluation of the NHS Advanced Access did use secret shopper type techniques and this is noted in the text.</p>
<p>Can we extract - or extrapolate - insights from recent PCMH demonstrations within and outside of VHA?</p>	<p>We did review the PACT Demo Lab materials that were assembled for the related Access Expert Panel as a part of our original material collection.</p>

Comment	Response
<p>Is there any indication of bias in our synthesis of the evidence? Yes - Note: I clicked on the Yes in order to make a comment, not with the idea of impugning anyone's integrity. The primary bias to which I am referring is the bias inherent in the method; The bias is that the method privileges certain things as "evidence." Once this method was chosen, it was conducted in an unbiased fashion. That said, I was very pleased to see the section entitled "additional relevant literature." However, there is another type of bias that may be present - academic bias. On page 34: "The lack of substantial additional hypothesis-testing studies of the implementation of Advance/Open Access in the past 6 years is a marked contrast to the period 2003-2010, when 15 studies were reported, and suggests that something has shifted in the perception of Advanced/Open Access since 2010." Alternatively, something has shifted in the perception of academic publication; practitioners who are doing work in the area may not think that academic publication is of value. (in my experience as a professor in both a medical school and business school, the lowest level of evidence perhaps, the research-practice divide is greater in management than it is in medicine.)</p>	<p>An interesting point that we have incorporated with this statement.</p>
<p>This Cochrane type review follows that method just fine. The bigger question is to what extent this approach meets the aim of the review "to determine what evidence is available to support improved organizational management of access in a multi-level organization such as VA." First, this approach privileges certain statements as evidence and it is a rather narrow view. Second, I have serious doubts that this approach really helps when dealing with such complex social interventions as implementation of advanced/open access. Such interventions are extremely context-dependent and the evidence hierarchy privileges context independent knowledge. In addition, sample sizes are by necessity rather small which makes it difficult to randomize out differences in context. The question for the manager of clinics (and I was one) is not so much what works ON THE AVERAGE, but what works for whom under what circumstances, <i>ie</i> where there are intervention by context interactions.</p>	<p>We first note that had this been a Cochrane review, we would have excluded nearly every study, as there were no randomized controlled trials.</p> <p>The point about "what is evidence" is a valid one. We have expanded our discussion of publication bias to be more inclusive of this point. We produced the AHRQ report entitled "Assessing the Evidence for Context-Sensitive Effectiveness and Safety of Patient Safety Practices," which highlights the importance of context, and describes key features of context which should be measured and reported. We are attuned to the reviewer's concerns about context-dependent interventions, and we collected context information to the extent possible. Unfortunately, a systematic review can only describe that which was included in the original publications, which is why we described this as a limitation.</p>

Comment	Response
<p>I find it astonishing that our approaches to improving access have so little grounding in evidence. That itself is an important finding, although how that should influence policymaking is tougher to assess. Should more research be done? Should our policy interventions occur in a stepwise fashion allowing for evaluation along the way? Should we even abandon standard access metrics altogether to look at something completely different, such as health outcomes? (One possible example to look at would be ACSC Hospitalizations).</p> <p>I was surprised with the "I" recommendation for TNA with no discussion about the relative merits of CAHPS Access items, which currently are the only consistently supported Access measure by NQF and NCQA. Most of the studies were done prior to wide adoption of CAHPS so the relative paucity of that metric is not an indicator of its inadequacy.</p> <p>I have also seen more recent literature that used Secret Shoppers to assess actual access in primary care offices - surprising to me that this technique wasn't mentioned, although it has been used to assess impact of health reform in MA and CA.</p> <p>Finally, it seems to me that this review focused largely on the IHI Open Access/Advanced Access model rather than other approaches to address Access. I think one important finding is that longer duration studies were not able to show sustainment of gains. I worry that this paper demonstrated too much "anchoring" on a single approach and that the literature search may have omitted other potentially valid alternatives (one example that pops into mind is the emerging literature on "Minute Clinics" which could be a useful means to supplement primary care).</p>	<p>This first comment is directed at policymakers and not the report per se.</p> <p>The next comment is a result of the difference between the question we were given "What definitions and measures of intervention success are used?" and the broader question "What are measures of access?" The former question restricts our scope to studies that evaluated a primary care access management intervention. The latter is a broader question that was not in our scope. Perhaps the reviewer could request to the ESP Coordinating Center a need for an ESP report on measures of access.</p> <p>As above, these Secret Shopper studies are studies of access in general, and not studies of evaluations of interventions to improve primary care access; hence they are not in our scope.</p> <p>We note that we were not anchored in any particular approach. We were charged with identifying evaluations of interventions to improve primary care access. As it turns out, nearly all of the published studies identified were about Advanced Access.</p>
<p>This is an excellent product. No substantive criticism or suggestions. A few minor typos:                      page 23 lines 25 and 52                      page 24 line 5                      page 32 line 16</p>	<p>These have been corrected, thank you for pointing them out.</p>
<ul style="list-style-type: none"> <li>• There have been some evaluations of educational initiatives to adopt advanced access and/or improve access in primary care in Canada. These may not meet criteria for the review but may be worth mentioning in the "additional relevant literature" section:                         <ul style="list-style-type: none"> <li>o McCarthy et al. "Improving primary care in British Columbia, Canada: evaluation of a peer-to-peer continuing education program for family physicians. BMC Medical Education 2012</li> <li>o Harris et al. "Impact of a quality improvement program on primary healthcare in Canada: A mixed-method evaluation" Health Policy 2014</li> </ul> </li> </ul>	<p>Thank you for these suggestions, they do meet our criteria and we have incorporated them.</p>



Comment	Response
<p>I was struck by the finding that TNA was the most commonly used measure of success for access interventions but there are no empiric data linking this choice to a health outcome. It would be helpful to understand more details on how TNA was measured. Was TNA measured for each physician in the clinic and then mean or median reported? Was TNA measured on the same day and time of the week (eg, if measured on Monday, TNA always looks better than on Friday if weekends are included)? Were weekends included in the measure?</p>	<p>We have now added more details about TNA measurement in the text and an appendix.</p>
<p>The section on page 14 related to continuity is sparse. There are numerous studies linking continuity to health outcomes and these should be cited. Please see a recent review done in Alberta: <a href="http://www.topalbertadoctors.org/file/top--evidence-summary--value-of-continuity.pdf">http://www.topalbertadoctors.org/file/top--evidence-summary--value-of-continuity.pdf</a> .</p> <p>There was also an excellent study recently published in the BMJ on continuity of care and outcomes: <a href="http://www.bmj.com/content/356/bmj.j84">http://www.bmj.com/content/356/bmj.j84</a> . Usual provider of care index is a standard measure of continuity but some of the other measures of continuity cited as measures used “with no justification” (eg, reference 27, 35) are probably more salient in practices where patients are enrolled or attached to a primary care provider.</p> <p>Continuity is an important balancing measure to access and has been shown to be valued by patients (see: Turner D, Tarrant C, Windridge K, Bryan S, Boulton M, Freeman G, et al. Do patients value continuity of care in general practice? An investigation using stated preference discrete choice experiments. Journal of Health Services Research &amp; Policy. 2007;12(3):132-7)</p>	<p>Our scope was restricted to studies that evaluated a primary care access management intervention. The broader topic about continuity as a measure of access was not in scope, but we appreciate the suggested literature provided and have incorporated them into our discussion of continuity.</p>

Comment	Response
<p>When discussing patient satisfaction as an outcome measures, it is important to note that <b>there is value in this measure regardless of its association with health outcomes.</b> Patient experience is one of the 3 points on the “triple aim” and improving patient satisfaction is a worthy goal in and of itself. There are, however, studies linking improved patient reported access with other outcomes. See:</p> <ul style="list-style-type: none"> <li>· Browne et al. “Measuring Patient Experience As A Strategy For Improving Primary Care” Health Affairs 2010</li> <li>· van den Berg MJ, van Loenen T, Westert GP. Accessible and continuous primary care may help reduce rates of emergency department use. An international survey in 34 countries. Family practice. 2016;33(1):42-50</li> <li>· Cowling TE, Cecil EV, Soljak MA, Lee JT, Millett C, Majeed A, et al. Access to primary care and visits to emergency departments in England: a cross-sectional, population-based study. PloS one. 2013;8(6):e66699.</li> <li>· Mian O, Pong R. Does better access to FPs decrease the likelihood of emergency department use? Results from the Primary Care Access Survey. Canadian Family Physician. 2012;58(11):e658-e66.</li> </ul>	<p>The value of patient satisfaction is an important point, we have now incorporated it into the discussion of patient satisfaction with the Browne and colleagues’ article cited. However, our scope was to assess interventions to improve primary care access, and not patient satisfaction per se (which might encompass may different interventions).</p> <p>The other 3 articles (with first authors van den Berg, Cowling, and Mian) fall out of scope for the review since they do not describe interventions, primary care access metrics, or primary care access management tools.</p>
<p>The authors describe advanced access and the related components. Although advanced access is frequently viewed as a set of rules to improve scheduling, it is better understood as a philosophy of care that requires a paradigm shift beginning with physicians feeling accountable for the care of a panel of patients, not appointment slots. I think it’s worth discussing this concept. Also, many misinterpret the “rules” in implementation and this is true of the NHS implementation where practices adopted policies of what Murray calls “access by denial” in lieu of doing the hard work of balancing supply and demand. I have discussed this previously in a related commentary I wrote which may be of interest: <b>Kiran et al.</b> Challenge of same-day access in primary care. Canadian Family Physician 2015.</p>	<p>We highlight the components of Advanced Access in response to the key question we were given, which focuses on key features of intervention. This is not to diminish the overarching model of Advanced/Open Access, and we have incorporated this point about the broader Advanced Access philosophy in the section where we describe the components.</p>
<p>The authors report the results of interventions on wait times and continuity. How about the result on emergency department use or chronic disease management? See:</p> <ul style="list-style-type: none"> <li>· Solberg LI, Maciosek MV, Sperl-Hillen JM, Crain AL, Engebretson KI, Asplin BR, et al. Does improved access to care affect utilization and costs for patients with chronic conditions? Am J Manag Care 2004;10(10):717-22.</li> <li>· Subramanian U, Ackermann RT, Brizendine EJ, Saha C, Rosenman MB, Willis DR, et al. Effect of advanced access scheduling on processes and intermediate outcomes of diabetes care and utilization. J Gen Intern Med 2009;24(3):327-33. Epub 2009 Jan 9.</li> </ul>	<p>We discussed relevant outcomes with our Technical Expert Panel, and as a result we focused on outcome measures that captured primary care access. While the impact of these interventions on emergency department use and disease management may be valuable impacts of such an intervention, these fall outside the scope of primary care access measures. Both these articles were identified in our searches, but we had excluded them since they did not include primary care access measures.</p>
<p>The article by Pope et al. does discuss unintended consequences related to patient experience. These outcomes could also be mentioned on page 23</p>	<p>Thank you, we now mention them as you suggest.</p>
<p>Here is an excellent Canadian on-line resource (from Ontario) that was missing from the list: <a href="https://machealth.ca/programs/advanced-access-efficiency-primary-care/">https://machealth.ca/programs/advanced-access-efficiency-primary-care/</a></p>	<p>This has been added to the tools discussion.</p>



## APPENDIX D. EVIDENCE TABLE

Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
<b>Studies of interventions to improve access</b>				
Radel, 2001 <sup>35</sup> "Redesigning clinical office practices to improve performance levels in an individual practice association model HMO"	Wait time for an appointment	None	Patients of a not-for-profit HMO in New York	Two clinical office practices in Buffalo, New York, one site was suburban with 5 PCPs and the other site was a solo practitioner with 4,500 patients and 2.5 support staff
Kennedy, 2003 <sup>26</sup> "Implementation of an open access scheduling system in a residency training program"	Utilization Patient satisfaction	None None	Patients of an academic family medicine practice	An academic family medicine practice seeing 24,000 visits annually with 3.3 faculty physicians FTE, 5.2 resident FTE, and 4.3 non-physician FTE
Meyers, 2003 <sup>30</sup> "Changing business practices for appointing in military outpatient medical clinics: the case for a true "open access" appointment scheme for primary care"	Third next available appointment Continuity (% patients assigned a PCP who were seen by PCP)	None None	Military TRICARE patients attending a military family medicine clinic	A military family medicine clinic
Belardi, 2004 <sup>20</sup> "A controlled trial of an advanced access appointment system in a residency family medicine center"	Third next available appointment Continuity (PCP-patient match, percentage of patient visits with patient-identified PCP)	None None	Patients of an academic family medicine clinic	An academic family medicine clinic in Pennsylvania
Solberg, 2004 <sup>42</sup> "Key issues in transforming health care organizations for quality: the case of advanced access"	Third next available appointment	Using first available appointment is "erroneous"	About 240,000 patients of HealthPartners Medical Group	17 HealthPartners clinics in Minnesota
Armstrong, 2005 <sup>19</sup> "Reinventing Veterans Health Administration: focus on primary care"	Mean number of days between date the appointment was first requested and the date the appointment was actually	None	All VA primary care patients	Nationwide VA primary care clinics

Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
Schall, 2004 <sup>41</sup> "Improving patient access to the Veterans Health Administration's primary care and specialty clinics"	scheduled  Third next available appointment  Next available appointment	None  None	Veteran patients visiting a VA primary care clinic	VA primary care clinic in New York
Lukas, 2008 <sup>27</sup> "The Implementation and Effectiveness of Advanced Clinic Access"	Next available appointment	None	Veterans patients visiting on of the included medical centers	Sample of 78 VA medical centers purposively sampled to capture high, medium, and low wait times
Parente, 2005 <sup>31</sup> "A pre-post comparison of service operational efficiency and patient satisfaction under open access scheduling"	PCP access (Whether the patient saw their PCP during that appointment)	None	Patients of a pediatric practice	A four-clinician academic pediatric practice
Boushon, 2006 <sup>22</sup> "Using a virtual breakthrough series collaborative to improve access in primary care."	Third next available appointment	Mention IHI	Patients at 17 organizations	17 organizations, no contextual description provided
Steinbauer, 2006 <sup>46</sup> "Implementing open-access scheduling in an academic practice."	Third next available appointment	None	Patients at Baylor family medicine in Houston	Academic urban primary care practice
Sampson, 2008 <sup>40</sup> "Impact of same-day appointments on patient satisfaction with general practice appointment systems"	Patient satisfaction with the appointment system	None	12,825 adult patients in English general practice	48 general practices in England
Pickin, 2004 <sup>33</sup> "Evaluation of advanced access in the national primary care collaborative"				

Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
<p>Windridge, 2004<sup>44</sup> "Problems with a 'target' approach to access in primary care: a qualitative study"</p> <p>Salisbury, 2007<sup>38</sup> "Impact of Advanced Access on access, workload, and continuity: controlled before-and-after and simulated-patient study."</p>	<p>Next available appointment Third next available</p> <p>Continuity of Care index Waits for particular MD</p>	<p>"third available has been advocated because it avoids fluctuations due to short-notice cancellations" Citation for index None</p>		
<p>Dixon, 2006<sup>23</sup> "Advanced access: more than just GP waiting times?"</p> <p>Goodall, 2006<sup>24</sup> "Implementation of Advanced Access in general practice: postal survey of practices"</p> <p>Salisbury, 2007<sup>37</sup> "Does Advanced Access improve access to primary health care? Questionnaire survey of patients"</p>	<p>Third next available appointment</p>	<p>None</p>	<p>Patients at English general practices</p>	<p>462 English general practices</p>
<p>Salisbury, 2007<sup>39</sup> "An evaluation of Advanced Access in general practice"</p> <p>Pope, 2008<sup>34</sup> "Improving access to primary care: 8 case studies of introducing Advanced Access in England."</p>	<p>Third next available appointment Continuity (patient seeing doctor they ideally wanted to see) None</p>	<p>None None None</p>	<p>Data were collected by "secret shoppers" calling practices to get appointments</p> <p>Patients at English general practices</p>	<p>47 general practices in England</p> <p>8 general practices in England</p>

Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
Rohrer, 2007 <sup>36</sup> "Impact of open-access scheduling on realized access"	Primary care visits for evaluation and management  "Other primary visits for preventative care"	None  None	1,410 family medicine patients classified as "chronic-stable" according to Adjusted Clinical Groups	Four Mayo clinics in different geographic locations
Mehrotra, 2008 <sup>29</sup> "Implementing open-access scheduling of visits in primary care practices: a cautionary tale"	Third next available appointment time	"Thought to be more stable"	Patients of Partners Community Health Care, no other details given	Six practices participating in an advanced access initiative in Massachusetts
Bennett, 2009 <sup>21</sup> "The effect of a carve-out advanced access scheduling system on no-show rates"	Third next available appointment  No-show rate  Continuity (proportion of appointments scheduled with PCP)	Cites working paper from IHI  None  None	Patients of a family medicine clinic in South Carolina. 74 percent female, 68 percent black, 2 percent self-pay, 14 percent Medicaid, 47 percent aged 45-64 years	Academic urban family practice clinic seeing 30,000 visit/year. Staffed by 14 faculty MDs, 30 residents, 4 fellows, one nurse practitioner. Panel size = 100 patients/half day
Phan, 2009 <sup>32</sup> "Decreased continuity in a residency clinic: a consequence of open access scheduling."	Continuity indices	Two previously used indices (Usual Provider Continuity Index and Modified Continuity Index)	2,208 patients seen at Family Medical Center	Family Medicine Center in Phoenix with about 12,000 visits/year. Academic, urban site, with 32 physicians (24 residents, 8 faculty)
Tantau, 2009 <sup>43</sup> "Accessing patient-centered care using the advanced access model."	Third next available appointment	"anchor metric for Advanced Access... more reliably reflects when the schedule actually has substantial capacity"	Patients of 2 organizations	Ministry Medical Group is multisite organization in Wisconsin with variability in site characteristics  Providence Community Health Centers at Capitol Hill HC is in a urban setting in Rhode Island.
Cameron, 2010 <sup>45</sup> "Adoption of open-access scheduling in an academic family practice"	Third next available appointment  Utilization  No-show rate	Cites a working paper from IHI	Patients of 2 family medicine clinics in Halifax, Nova Scotia	2 family medicine clinics, one serving 20,000 patient visits/year and the other 10,000 patient visits/year
Tseng, 2015 <sup>47</sup>	Third next available	None	OHSU Family Medicine Clinic (panel	Academic Family Medicine

Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
"Implementation of Advanced Access in a Family Medicine Residency Practice"	appointment  Patient continuity by team  (Percentage of patients assigned to a PCP who had seen their PCP during the month) Press-Ganey satisfaction ("ease of scheduling appointments")	None  None	of 12,000 patients, "Spanning a wide range of ages and socioeconomic backgrounds")	Residency Program
Harris, 2015 <sup>25</sup>  "Impact of a quality improvement program on primary healthcare in Canada: A mixed-method evaluation"	Third next available appointment	None	Patients seeing providers that participated in the Quality Improvement and Innovation Partnership (QIIP). Patient demographics for both QIIP and control are provided for subgroups including those providing foot exam, A1c, and colorectal cancer screening data in Table 3 of the publication.	Family Health Teams and Community Health Centers in Ontario, Canada
MacCarthy, 2012 <sup>28</sup>  "Improving primary care in British Columbia, Canada: evaluation of a peer-to-peer continuing education program for family physicians"	Next available urgent appointment  Next available regular appointment  Third next available appointment	None	Patients of 157 general practitioners and 109 medical office assistants who participated in the advanced access module of the intervention	Primary care practices in British Columbia, Canada
<b>Studies about primary care access, but not hypothesis test of actual intervention</b>				
Murray & Bewick, 2003 <sup>13</sup>	None. This is a commentary about advanced access, with access classified only as "delays in care"			
Pierdon, 2004 <sup>15</sup> "Implementing advanced access in a group practice network"	Third next available appointment	None	Geisinger Health System patients	Geisinger Health System clinics
Green, 2007 <sup>56</sup> "Providing timely access to care:	Overflow frequency level (The fraction of days when	None	None. This is a modeling study.	



Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
what is the right patient panel size?"	demand exceeds the average number of appointments available)			
NHS, 2009 <sup>53</sup> "Improving Access, responding to patients: A how-to guide for GP practices"	"Good access" is about: -Patients being able to book an appointment quickly, within a reasonable time frame, and pre-book one if they wish -Patients being able to see a preferred clinician if they wish to wait longer for an appointment	None	None. This is a how-to guide	English National Health Source General Practitioners Practices
Balasubramanian, 2010 <sup>54</sup> "Improving clinical access and continuity through physician panel redesign"	Wait time (until appointment with PCP)  Continuity with PCP	None  None	None. This is a mathematical modeling study that assesses how the composition of a panel can be organized to increase access	
Balasubramanian, 2013 <sup>55</sup> "Dynamic allocation of same-day requests in multi-physician primary care practices in the presence of prescheduled appointments"	"Timely access"  "Continuity of care"	"Two operational measures important for primary care"	None. This is a mathematical modeling study that assesses where in a normal workday pre-scheduled appointments influence access and continuity.	
Knight, 2013 <sup>12</sup> "Appointments 101--how to shape a more effective appointment system."	Third next available appointment  "Unmet demand" (a weekly tally of how many patients could not be given an appointment)  "Patient satisfaction" ("I was able to make an appointment on the day I wanted with the clinician I wanted to see")	None  None  None	None. This is an article that "shares lessons from the Australia Primary Care Collaborative"	Primary care
Berry, 2014 <sup>6</sup> "Toward a strategy of patient-	Patient-centered access is defined as "consistently	None	None. This is a commentary/how-to guide	None





Author, Year Title	Definition of Access	Evidence to support it	Sample of patients	Settings
centered access to primary care"	providing convenient access to services that patients need and desire"			
Donahue, 2015 <sup>18</sup> "Tackling the Triple Aim in Primary Care Residencies: The I3 POP Collaborative"	Usual provider continuity (not otherwise defined)  Third next available appointment	"The triple aim"  "The triple aim"	300,000 patients in North Carolina, South Carolina, and Virginia; not otherwise described	27 primary care residents program

## APPENDIX E. CITATIONS OF FULL-TEXT EXCLUDES

### Not evaluations/Design

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### Not about access

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### Access other than getting primary care appointment

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**Specific population**

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**No outcomes of interest**

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workload in primary care: what is the optimal size of practices? A cross-sectional study. *Health Policy*. 2006;77(3):260-267.

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### **Not Available**

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## APPENDIX F. MEASUREMENT OF THIRD NEXT AVAILABLE

Author, Year Title	Description of Measurement
Solberg, 2004 <sup>42</sup> "Key issues in transforming health care organizations for quality: the case of advanced access"	"Because the appointment data had originally been collected for individual physicians, data analysis required accounting for the full-time equivalent (FTE) status of each physician and nurse practitioner for adults and then calculating a mean access interval for each clinic for each month from June 1999 through August 2002."
Boushon, 2006 <sup>22</sup> "Using a virtual breakthrough series collaborative to improve access in primary care."	"The main outcome measure for the VBTS, as for traditional BTS collaboratives working on reduction in waiting times, was the average number of days to third-next-available appointment."
Steinbauer, 2006 <sup>46</sup> "Implementing open-access scheduling in an academic practice."	"We diligently tracked our backlog by measuring the time until the third available appointment for a brief visit and found that it varied from one provider to another in a range from 10 to 25 days."
<p>NHS</p> <p>Salisbury, 2007<sup>38</sup> "Impact of Advanced Access on access, workload, and continuity: controlled before-and-after and simulated-patient study"</p> <p>Dixon, 2006<sup>23</sup> "Advanced access: more than just GP waiting times?"</p>	<p>"In a 'simulated-patient' study, the researchers telephoned each practice once a month for 11 consecutive months to make an appointment with a doctor. Each attempt to contact the practice was on a randomly selected day of the week and within a randomly selected time slot. If the telephone was busy, diverted to an answer machine, and/or not answered within 2 minutes, up to 5 further calls were made during the time slot. Six attempts to contact each practice involved a request for an appointment with any doctor and 5 with a randomly selected named doctor. The time taken to make telephone contact and the wait for the first and the third available appointments were recorded (the third available appointment has been advocated as a better measure because it avoids fluctuations due to short-notice cancellations, but is more difficult to collect reliably). If the receptionist was not able to offer any appointments, offered alternatives were recorded."</p> <p>"Three measures of access to primary care services were used: time to third appointment (TTTA) with a GP; TTTA with a nurse; and percentage of patients seen on day of choice. The choice of TTTA as the measure of access is common to other evaluations of advanced access, and is justified on the basis that taking the 1st or 2nd available appointment is highly subject to random effect."</p>
Mehrotra, 2008 <sup>29</sup> "Implementing open-access scheduling of visits in primary care practices: a cautionary tale"	"We calculated the 3rd available appointment measure for each practice based upon each provider's 3rd available time and weighted by the number of practice sessions the provider worked each week. In calculating the 3rd available appointment, we counted calendar days (eg, including weekends) and days off. Although part of open access implementation includes eliminating carve-out appointments (appointments which are closed to scheduling until they are made available for urgent visits the day of or the day prior to those visits), one practice retained these appointments, and we did not count them unless they had been released for booking. We also did not count appointments for providers on maternity leave or other extended absences, and those for temporary and urgent care providers. If providers were on vacation, they were included. All 3rd available measurements reported were collected at a consistent day and time (ie Mondays before the practices opened) and were collected by 3

Author, Year Title	Description of Measurement
	members of the open access implementation team either manually or via automated scheduling systems when available. Data checks were done to ensure the 3 study staff were collecting data in a comparable manner. During the implementation period we collected data on 3rd available appointment at least monthly. We trained practice staff to measure their own 3rd available times, and when practices began their own data collection or when no changes were being made within the practice, we collected data less frequently. We did not include 3rd available times collected by practices in our analyses."
Bennett, 2009 <sup>21</sup> "The effect of a carve-out advanced access scheduling system on no-show rates"	"On the first working day of each month, each provider's schedule was checked, and their third-next available appointment for continuity appointments was recorded."
Cameron, 2010 <sup>45</sup> "Adoption of open-access scheduling in an academic family practice"	"This value was calculated approximately weekly for each physician in both practices and tabulated in a spreadsheet. The values for all physicians were averaged to determine the average clinic wait time by month."
Tseng, 2015 <sup>47</sup> "Implementation of Advanced Access in a Family Medicine Residency Practice"	"The first measure we tracked was <i>third next available appointments</i> (Figure 1). Because this value changes constantly, we chose to run the report on the Monday morning of each week. The average third next available appointment represents the individual provider average rather than the team average. The median is reported in a similar way. We noted a difference between our average and median third next available, which reflects several individual providers with high third next available numbers."
Harris, 2015 <sup>25</sup> "Impact of a quality improvement program on primary healthcare in Canada: A mixed-method evaluation"	"The survey included instructions for measuring the number of days until the third-next-available appointment, and a table to complete with the dates for the first, second, and third-next-available appointment (including date and time of measurement). To reduce the effect of seasonal changes on appointment variability, the surveys were sent once all physicians were recruited for the chart audit."
MacCarthy, 2012 <sup>28</sup> "Improving primary care in British Columbia, Canada: evaluation of a peer-to-peer continuing education program for family physicians"	"... wait times (in days) on urgent, regular and third next available appointments, based on estimates given by all GP respondents"