

## Multimedia Appendix 1. Summary of the 21 Web-based scheduling systems

Service or Provider Names	Features	Assessment Methods	Results	Improved Metrics
Choose and Book [1-3]	<ul style="list-style-type: none"> <li>UK national appointment system for National Health Service (NHS)</li> <li>Supports Web-based appointments</li> <li>Supports electronic referrals</li> </ul>	Retrospective analysis of patient attendance data. [2]	Appointments booked with "Choose and Book" had a significantly lower no-show rate than those made by traditional appointment methods. This system optimized the referral process, reduced delays, and streamlined outpatient referral pathways.	<ul style="list-style-type: none"> <li>Reduced no-show rate</li> <li>Optimized the referral process</li> <li>Reduced wait time</li> </ul>
Holdsworth House Medical Practice [4]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>The appointment service is a component of the Australian practice's "e-communication" system</li> <li>Email-based</li> <li>Appointments are confirmed by email or text messages</li> </ul>	Not reported	This system was efficient and saved clinicians' valuable time. Many patients preferred to use this system.	<ul style="list-style-type: none"> <li>Improved efficiency</li> <li>Reduced staff labor</li> </ul>
ZocDoc [5]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Medical appointment SaaS</li> <li>Supports same-day appointments</li> <li>Practices can track confirmed appointments, cancellations, and missed appointments</li> </ul>	Retrospective analysis of ZocDoc appointment records for 3 dermatology clinics over a 6-month period.	Appointments booked with ZocDoc had a much lower no-show rate (6.9%) than those made by traditional appointment methods at dermatology clinics.	<ul style="list-style-type: none"> <li>Reduced no-show rate</li> </ul>
WAS [6]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>Proprietary appointment system for Xijing hospital in China</li> <li>Patients receive appointment numbers to register their visits</li> </ul>	Follow-up telephone interviews with users.	Patients using WAS were more satisfied than patients using the usual queuing method (71.7% vs. 49.0%, $P < .001$ ). The average invalid waiting time for queuing and WAS were significantly different (86 minutes vs 7 minutes, $P < .001$ ).	<ul style="list-style-type: none"> <li>Increased satisfaction</li> <li>Reduced wait time</li> </ul>
eTriage [7]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Web-based appointment service for sexual health clinics in the UK</li> </ul>	Questionnaire-based survey completed on attendance.	100% of patients can get an appointment within 48 hours, compared to 48% of patients using regular appointment methods. 70% of the users were satisfied with the service. 94% would recommend it to a friend. 96% would reuse it. It reduced the clinic's and call center's staff labor by releasing clinic capacity.	<ul style="list-style-type: none"> <li>Improved patient satisfaction</li> <li>Reduced wait time</li> <li>Reduced staff labor</li> </ul>
EppointmentPlus [8,9]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Medical appointment SaaS</li> <li>Can integrate with the practice's management software</li> <li>Appointment time slots are categorized by visit types</li> </ul>	Not reported	This system kept doctors in control and reduced staff labor.	<ul style="list-style-type: none"> <li>Reduced staff labor</li> </ul>
NexShed Scheduware [8]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Medical appointment SaaS</li> <li>Can integrate with the practice's management software</li> <li>Can work together with traditional scheduling</li> <li>Can restrict the type and time of appointments</li> <li>Compatible with EHR systems from other vendors</li> </ul>	Not reported	This system kept doctors in control and reduced staff labor.	<ul style="list-style-type: none"> <li>Reduced staff labor</li> </ul>
Murray Hill Medical Group [10]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Patients can choose available appointment times but the amount of time for the appointment is not revealed to them</li> <li>Appointments will be confirmed by email</li> <li>Patients will receive two reminders</li> <li>Patients can view, cancel and reschedule appointments</li> </ul>	Not reported	Patient satisfaction were improved and failed appointments were reduced. 95% of the patients who had used the Web-based appointment service would not use other appointment methods. About 50% of the appointments were made for the next day and 90% were made for within two weeks. It saved the medical group \$170,000 annually due to the reduction of staff. Doctors' empty appointment slots were filled overnight and thus income was increased. The no-show rate decreased to less than 1% from about 8% (phone-based appointments).	<ul style="list-style-type: none"> <li>Improved satisfaction</li> <li>Reduced no-show rate</li> <li>Reduced wait time</li> <li>Reduced staff labor</li> <li>Improved efficiency</li> <li>Increased revenue</li> </ul>

TRICARE Online [8]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Appointment service for military hospitals or clinics by the US Department of Defense.</li> <li>Patients can schedule, view and cancel appointments</li> <li>Patients will receive up to three reminders by email or text</li> </ul>	Not reported	This system reduced the number of wrong appointment types and staff labor and improved patient satisfaction. Appointments made by TRICARE Online had lower no-show rate (2%) than those made by phone calls (8%).	<ul style="list-style-type: none"> <li>Reduced wrong appointment types</li> <li>Improved satisfaction</li> <li>Reduced staff labor</li> <li>Reduced no-show rate</li> </ul>
Tiny Tots [11,12]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Proprietary appointment system for Tiny Tots D.D.O in Canada</li> <li>Rule-based</li> <li>Honors doctors' preferences by allowing their own appointment rules</li> </ul>	Not reported	Patients' and doctors' complaints about the reception staff decreased and the payments for visits increased. The number of staff and wages decreased by 33% and 2%, respectively.	<ul style="list-style-type: none"> <li>Increased revenue</li> <li>Improved satisfaction</li> <li>Reduced staff labor</li> </ul>
Dartmouth-Hitchcock Medical Center [13,14]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>Clinical messaging service</li> <li>Patients can request, review, reschedule, and cancel appointments</li> </ul>	Not reported	This system reduced the call volume and cost and improved patient satisfaction. There was a 40-42% reduction in no-show rate. It also streamlined operations and increased staff efficiency.	<ul style="list-style-type: none"> <li>Reduced no-show rate [13,14]</li> <li>Streamlined operations and improved efficiency</li> <li>Improved satisfaction</li> <li>Reduced cost</li> </ul>
myMDAnderson [11]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>Based on secure messaging</li> </ul>	Not reported	More than 3500 patients had used the service since it was released.	<ul style="list-style-type: none"> <li>Increased popularity</li> </ul>
HealthPartners [11]	<ul style="list-style-type: none"> <li>Real-time</li> <li>Almost all appointments are scheduled for 20 minutes</li> </ul>	Not reported	1100 patients opened their accounts within 2 weeks after the system was released and about half of them had used the appointment service. It reduced the time to make an appointment.	<ul style="list-style-type: none"> <li>Increased popularity</li> <li>Reduced wait time</li> </ul>
PAMFOnline [15]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>The appointment service is a component of the practice's patient portal</li> </ul>	Online patient satisfaction survey 9 months after the general release.	In a survey 9 months after the release of the system, the Web-based appointment service was ranked at 4 in a 1 to 5 scale with 5 being extremely important. Phone-based appointments and walk-ins decreased and operational efficiency was improved.	<ul style="list-style-type: none"> <li>Reduced staff labor</li> <li>Improved operational efficiency</li> </ul>
Geisinger Health System [16]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>Email-based</li> </ul>	Not reported	This practice had about 1.8 million unique visits online, about twice that number in 2001.	<ul style="list-style-type: none"> <li>Increased popularity</li> </ul>
Deaconess Health System [16]	<ul style="list-style-type: none"> <li>The appointment service is a component of the practice's patient portal</li> </ul>	Not reported	This practice had about 148,000 visits online each month, much higher than before adopting the system. This new system increased the total visits by about 168% over the first quarter of previous year.	<ul style="list-style-type: none"> <li>Increased popularity</li> </ul>
Methodist Health Care System [16]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>The appointment service is a component of the practice's patient portal</li> </ul>	Not reported	\$1.7 million of the expected revenue was attributed to the system.	<ul style="list-style-type: none"> <li>Increased revenue</li> </ul>
Hatboro Medical Associates [17]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>The appointment service is a component of the practice's web site</li> <li>Appointments will be verified by phone calls</li> <li>Patient cannot select time slots by themselves</li> </ul>	Not reported	The practice's website reduced call volume, saved staff's time, improved overall efficiencies and income.	<ul style="list-style-type: none"> <li>Reduced staff labor</li> <li>Improved efficiency</li> <li>Increased revenue</li> </ul>
Restorative Dental [18]	<ul style="list-style-type: none"> <li>Asynchronous</li> <li>Email-based</li> </ul>	Not reported	This appointment system reduced the average cost to make an appointment from \$70 to \$10 and saved staff's time.	<ul style="list-style-type: none"> <li>Reduced cost</li> <li>Reduced staff labor</li> </ul>
MyGroupHealth (MyGH) [19,20]	<ul style="list-style-type: none"> <li>Allows same-day appointments with primary care physicians</li> <li>The appointment service is a component of the MyGH system</li> </ul>	Surveys with both providers and patients. [20]	The MyGH system increased patient satisfaction and reduced health care costs. Shorter wait times and higher satisfaction were reported in surveys.	<ul style="list-style-type: none"> <li>Reduced wait time</li> <li>Improved satisfaction</li> <li>Reduced cost</li> </ul>
Ubiquitous Multicriteria Clinic Recommendation System [21]	<ul style="list-style-type: none"> <li>Designed to recommend clinics to patients in Taiwan</li> <li>Recommends clinics based on a patient's location, travel speed, potential waiting time in the clinic, and preference for a clinic</li> </ul>	A field experiment with 10 patients.	This system balanced patient load and reduced wait time.	<ul style="list-style-type: none"> <li>Balanced patient load</li> <li>Reduced wait time</li> </ul>

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