# Electronic Test Result Communication in the Era of the 21st Century Cures Act

## Appendix B. Included Studies

| | | | | | Type of Data Collection | | | |
|---|---|---|---|---|---|---|---|---|
| **First Author Last Name and Year of Publication** | **Journal, Volume (Issue), Page Nos.** | **Country** | **Design (D) Participants/Sample (P) Setting (S)[1]** | **Mode of Data Collection** | **Portal Usage Data[2]** | **Portal User Characteristics** | **Patient Experiences, Attitudes, Preferences** | **Clinician Experiences, Attitudes, Preferences** |
| Allard 2001 | Data in Brief, 35, 10686 | United States | D: Retrospective record review<br>P: 40,460 patients<br>S: Academic medical center | Record review, review of portal utilization data | ♦ | ♦ | | |
| Alpert 2018 | JMIR Cancer, 4(1), e5 | United States | D: Cross-sectional<br>P: 35 patients, 13 oncologists, and 12 medical informaticists<br>S: Cancer center | Interview | ♦ | | ♦ | ♦ |
| Anyidoho 2023 | JCO Oncology Practice, 19(5), e706-e713 | United States | D: Prospective, observational<br>P: 159 clinicians<br>S: U.S. cancer centers (predominantly academic) | Survey/ questionnaire | | | | ♦ |
| Avdagovska 2020 | Journal of Medical Internet Research, 22(12), e24568 | Canada | D: Scoping review<br>P: Studies of the impact of patient portal use | Literature review | ♦ | ♦ | ♦ | ♦ |
| Bar-Lev 2020 | Israel Journal of Health Policy Research, 9(1), 58 | Israel | D: Experimental study of user reactions to randomly assigned display formats for test resutls<br>P: 270 patients | Survey | ♦ | | ♦ | |
| Baun 2020 | Journal of Medical Internet Research, 22(2), 10 | Denmark | D: Cross-sectional<br>P: 38 patients with metastatic breast cancer<br>S: Academic medical center | Survey; interview (subsample) | ♦ | | | |

| | | | | | Type of Data Collection | | | |
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| Bhalla 2023 | JAMA Oncology, 10(1), 139-140 | United States | D: Retrospective record review<br>P: 44,419 patients<br>S: Academic medical center | Review of portal utilization data and associated medical records | ♦ | ♦ | | |
| Black 2021 | Journal of Neuropsychiatry and Clinical Neurosciences, 33(1), 80-83 | United States | D: Cross-sectional<br>P: 10 social workers<br>S: Huntington's disease centers | Survey | | | | ♦ |
| Bleeker 2021 | Journal of Clinical Oncology, 39 (15 Suppl), 1544 | United States | D: Cross-sectional<br>P: 100 patients; unspecified number of clinicians<br>S: Rural health system | Survey | | | ♦ | ♦ |
| Brooks 2023 | BMC Health Services Research, 23, 216 | United States | D: Cross-sectional<br>P: 29 patients, 29 clinicians<br>S: Comprehensive cancer center | Survey/ questionnaire, Interview | | | ♦ | ♦ |
| Bruno 2022 | Health and Technology, 12(1), 59-67 | United States | D: Cross-sectional<br>P: 8030 patients<br>S: Academic medical center | Survey | | | ♦ | |
| Burgdorf 2023 | Journal of the American Medical Directors Association, 25(4), 729-73.e4 | United States | D: Retrospective record review<br>P: 8,409 home health care episodes for 4,878 unique patients<br>S: Academic health system | Review of portal utilization data and associated medical records | ♦ | ♦ | | |

| | | | | | Type of Data Collection | | | |
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| Cajander 2018 | Studies in Health Technology and Informatics, 247, 271-275 | Sweden | D: Cross-sectional<br>P: 7 nurses<br>S: Primary care | Interview | | | | ♦ |
| Chung 2023 | Digital Health, 9 (online first) | United States | D: Observational feasibility and acceptability study<br>P: 12 radiation oncologists<br>S: Academic medical center | Survey/ questionnaire | | | | ♦ |
| Coughlin 2018 | Journal of Cancer Treatment & Diagnosis, 2(6), 10.29245/2578-2967/2018/6.1154 | United States | D: Literature review<br>P: Studies of web portal use by patients with cancer | Literature review | ♦ | ♦ | ♦ | ♦ |
| Cox 2020 | BMJ Open, 10(1), 7 | U.K. | D: Cross-sectional<br>P: 121 clinicians, 282 patients<br>S: N/A; convenience sample | Survey | | | ♦ | ♦ |
| Cristofaro 2020 | Journal of Digital Imaging, 33(6), 1479-1486 | Italy | D: Retrospective record review<br>P: 9068 imaging exams<br>S: Single health service region | Review of portal utilization data & associated patient records | ♦ | ♦ | | |
| Dahm 2021 | Patient Education and Counseling, 104(8), 1970-1977 | Australia | D: Cross-sectional<br>P: 26 clinicians, 32 patients<br>S: 3 emergency departments | Interview | | | ♦ | ♦ |

| | | | | | Type of Data Collection | | | |
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| Danforth 2019 | American Journal of Kidney Diseases, 74(5), 589-600 | United States | D: Mixed methods (record review and interview)<br>P: 244540 patients, 15 clinicians<br>S: Large integrated health system | Review of portal utilization data & associated patient records (patients); interview (clinicians) | ♦ | | | ♦ |
| Datillo 2017 | Applied Clinical Informatics, 8(3),832-844 | United States | D: Cross-sectional<br>P: 310 patients<br>S: Orthopedic practice in an academic health center | Survey | | | ♦ | |
| Dobson 2022 | New Zealand Medical Journal, 135(1556), 114-123 | New Zealand | D: Cross-sectional<br>P: Unspecified number of patients<br>S: Regional health board | Interview | | | ♦ | |
| Edmonds 2019 | BMC Medical Informatics and Decision Making, 19(1):187 | United States | D: Secondary analysis of clinical trial data<br>P: 4669 patients<br>S: Two academic medical centers | Interview | ♦ | ♦ | | |
| Edwards 2020 | Academic Radiology, 27(5), 739-743 | United States | D: Cross-sectional<br>P: 112 parents of pediatric radiology patients<br>S: Radiology department at an academic medical center | Survey | ♦ | | ♦ | |
| Ellenbogen 2021 | Journal of the American College of Radiology, 18(6), 864-867 | United States | D: Retrospective record review at 2 time points (before and after portal integration with image viewing portal)<br>P: 15127 patients<br>S: Academic medical center | Review of portal utilization data | ♦ | | | |

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| Emamekhoo 2023 | JCO Clinical Cancer Informatics, 7, e2200119 | United States | D: Retrospective record review<br>P: 2,076 patients<br>S: Cancer center at an academic medical center | Review of portal utilization data | ♦ | | | |
| Eustace 2023 | International Journal of Radiation Oncology Biology Physics, 117(2), S125-S126 | United States | D: Cross-sectional<br>P: 54 patients<br>S: Academic medical center | Survey/ questionnaire | | | ♦ | |
| Falotico 2023 | Journal of the American Academy of Dermatology, 89(5), 1058-1060 | United States | D: Retrospective record review<br>P: 505 in-basket messages from patients to providers<br>S: Academic dermatology practice | Medical record review | | | ♦ | |
| Ford 2021 | Journal of Adolescent Health, 69(6), 873-877 | United States | D: Cross-sectional<br>P: Healthcare professionals (sample size unknown)<br>S: 7 adolescent health programs in academic medical centers | Qualitative summary of professional meeeting | | | | ♦ |
| Foster 2019 | Journal of Medical Internet Research, 21(6), 14 | United States | D: Retrospective record review<br>P: 208635 tests in 25361 patients<br>S: Academic emergency department | Review of portal utilization data & associated patient records | ♦ | ♦ | | |
| Fraccaro 2018 | BMC Medical Informatics and Decision Making, 18(1), 11 | U.K. | D: Experimental study of user reactions to different ways of presenting of lab results (presented in random order)<br>P: 20 patients<br>S: Renal transplant clinic | Survey, eye tracking measurement | | | ♦ | |

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| Freise 2021 | JMIR Formative Research, 5(2), 10 | U.K. | D: Cross-sectional<br>P: 160 patients<br>S: Single health service region | Survey | | | ♦ | |
| Garry 2020 | Journal of the American College of Radiology, 17(9), 1130-1138 | United States | D: Cross-sectional<br>P: 1005 patients<br>S: Academic health system | Survey | | | ♦ | |
| Ghalibaf 2017 | JMIR Medical Informatics, 5(2), 49-58 | Iran | D: Cross-sectional evaluation research<br>P: 5 clinicians, 8 patients (evaluation phase)<br>S: Endocrinology clinic | Interview | | | ♦ | ♦ |
| Giardina 2018 | Journal of the American Medical Informatics Association, 25(4), 440-446 | United States | D: Cross-sectional<br>P: 95 patients<br>S: Four outpatient clinics | Survey, interview | | | ♦ | |
| Gibbs 2018 | Sexually Transmitted Infections, 94(8), 622-624 | U.K. | D: Cross-sectional<br>P: 426 patients (36 interviews)<br>S: Six community sexually transmitted infection screening programs | Survey, interview, review of portal utilization data | ♦ | | ♦ | |
| Gorski 2021 | Laboratory Investigation, 101(Suppl 1), 1154-1155 | Canada | D: Retrospective record review<br>P: Patients with pathology results (sample size not specified)<br>S: Academic medical center | Review of portal utilization data and access to educational web site linked from portal | ♦ | | | |

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| Haggstrom 2019 | Journal of Rural Health, 35(2), 144-154 | United States | D: Cross-sectional<br>P: 970 randomly sampled adults from the community<br>S: 34 counties in the state of Indiana | Survey | ♦ | ♦ | | |
| Halaska 2019 | Journal of Medical Internet Research, 21(7), e12595 | United States | D: Cross-sectional<br>P: 105 patients<br>S: Community feedback panel in the state of Colorado | Survey | | | ♦ | |
| Hazara 2019 | Clinical Kidney Journal, 13(1), 1-7 | U.K. | D: Literature review<br>P: Studies of the PatientView portal<br>S: Renal clinics in the U.K. | Literature review | ♦ | | ♦ | |
| Heponiemi 2022 | Digital Health, 8, 10 | Finland | D: Cross-sectional<br>P: 4495 adults<br>S: Population-based national sample | Survey | ♦ | ♦ | | |
| Huerta 2017 | Annals of Internal Medicine, 167(11), 816-817 | United States | D: Prospective, observational<br>P: 179 patients<br>S: Academic medical center (15 rooms in 1 patient unit in each of 2 hospitals) | Survey, interview | ♦ | | ♦ | |
| Hulter 2023 | PLoS ONE, 18(2), e0280768 | Netherlands | D: Cross-sectional<br>P: 4,592 patients<br>S: Teaching hospital in the Netherlands | Survey/ questionnaire, Interview | | | ♦ | |
| Joseph 2022 | Studies in Health Technology and Informatics, 295, 175-178 | Canada | D: Case study<br>P: One older adult user of a lab results portal<br>S: Provincial health research platform | Interview, journey mapping | | | ♦ | |

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| Kalejta 2019 | Journal of Genetic Counseling, 28(4), 847-855 | United States | D: Cross-sectional<br>P: 10,170 patients<br>S: Obstetrics practices in a large regional health system | Review of portal utilization data, test result comprehension survey | ♦ | | ♦ | |
| Kelly 2020 | Hospital Pediatrics, 10(11), 1002-1005 | United States | D: Cross-sectional<br>P: 96 health care professionals (47 physicians, 41 nurses, 8 pharmacists)<br>S: Tertiary children's hospital | Survey | | | | ♦ |
| Kelly 2019 | Hospital Pediatrics, 9(4), 273-280 | United States | D: Cross-sectional<br>P: 14 parents of inpatients<br>S: General medical/surgical unit in a tertiary children's hospital | Interview | | | ♦ | |
| Kim 2018 | JMIR Formative Research, 2(1), e6 | United States | D: Cross-sectional<br>P: 18 low-income pregnant women<br>S: Outpatient prenatal clinic | Interview, medical record review | ♦ | ♦ | ♦ | |
| Korngiebel 2018 | Journal of Genetic Counseling, 27(2), 349-357 | United States | D: Cross-sectional<br>P: 20 health care professionals (genetic counselors and specialist physicians)<br>S: Unclear; purposive sampling | Interview | | | | ♦ |
| Korngiebel 2022 | JMIRx Med, 3(2), e29706 | United States | D: Observational: cross sectional/one-time<br>P: 59 patients<br>S: Single academic medical center | Interview | | | ♦ | |

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| **First Author Last Name and Year of Publication** | **Journal, Volume (Issue), Page Nos.** | **Country** | **Design (D) Participants/Sample (P) Setting (S)[1]** | **Mode of Data Collection** | **Portal Usage Data[2]** | **Portal User Characteristics** | **Patient Experiences, Attitudes, Preferences** | **Clinician Experiences, Attitudes, Preferences** |
| Krasowski 2017 | Journal of Pathology Informatics, 8, 45 | United States | D: Retrospective record review<br>P: 1,585,749 test results (inpatient, outpatient, & emergency department)<br>S: Academic health system | Review of portal utilization data & associated patient records | ♦ | ♦ | ♦ | |
| Latulipe 2018 | Journal of Medical Internet Research, 20(11), e10524 | United States | D: Cross-sectional<br>P: 10 low-income older adults<br>S: Academic medical center | Interview | | | ♦ | |
| Lee 2018 | Journal of the American Geriatrics Society, 66, S161 | United States | D: Cross-sectional<br>P: 4,551 adults aged 65-90<br>S: Large regional health system | Survey | | ♦ | ♦ | |
| Leonard 2022 | American Journal of Surgery, 224(1), 27-34 | United States | D: Cross-sectional<br>P: 69 clinicians, 57 patients<br>S: Academic medical center | Survey | | | ♦ | ♦ |
| Li 2022 | Neurology, 98(18 Suppl), 669 | United States | D: Retrospective record review<br>P: 439 patients with multiple sclerosis<br>S: Academic outpatient clinic | Review of medical records | | | ♦ | |
| Lo 2022 | Journal of Patient Experience, 9, 23743735221112216 | Canada | D: Cross-sectional<br>P: 16,498 patients<br>S: Academic health system | Survey | ♦ | | ♦ | |
| Lockhart 2019 | Ulster Medical Journal, 88(3), 157-161 | U.K. | D: Cross-sectional<br>P: 75 patients<br>S: Three outpatient endocrinology clinics | Survey | | | ♦ | |

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|---|---|---|---|---|---|---|---|---|
| | | | | | Portal Usage Data[2] | Portal User Characteristics | Patient Experiences, Attitudes, Preferences | Clinician Experiences, Attitudes, Preferences |
| Luoh 2021 | JNCCN Journal of the National Comprehensive Cancer Network, 19(5.5), 592 | United States | D: Retrospective record review<br>P: 5,950 patients<br>S: Medical oncology departments at a comprehensive cancer center | Review of portal utilization data & associated patient records | ♦ | | | |
| McCleary 2018 | Journal of Oncology Practice, 14(8), e451-e461 | United States | D: Cross-sectional<br>P: 1,019 patients (survey), 20 staff (focus group), and 5 PFAC members (focus group)<br>S: Comprehensive cancer center | Survey, focus groups | | | ♦ | See note[3] |
| Moerenhout 2021 | Health Informatics Journal, 27(1), 1460458220980039 | Belgium | D: Cross-sectional<br>P: 1,688 patients<br>S: Resident of one Belgian province | Survey | | | ♦ | |
| Monkman 2022a | Studies in Health Technology and Informatics, 294, 599-603 | Canada | D: Cross-sectional<br>P: 25 patients<br>S: Online health research platform | Interview | | | ♦ | |
| Monkman 2022b | Studies in Health Technology and Informatics, 290, 867-871 | Canada | D: Cross-sectional<br>P: 25 patients<br>S: Online health research platform | Interview | | | ♦ | |
| Monkman 2023 | JMIR Human Factors, 10, e42843 | Canada | D: Cross-sectional<br>P: 30 adult test results portal users<br>S: Web-based platform for health research volunteers in British Columbia, Canada | Survey/ questionnaire | | | ♦ | |

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| Morrow 2019 | Journal of Experimental Psychology: Applied, 25(1), 41-61 | United States | D: Quasi-experimental<br>P: 144 community-dwelling adults aged 60-94<br>S: Not specified | Survey | | | ♦ | |
| Morrow 2017 | Journal of Biomedical Informatics, 69, 63-74 | United States | D: Quasi-experimental<br>P: 12 and 24 older adults (2 studies)<br>S: Regional health research panel | Survey, interview | | | ♦ | |
| Murphy 2019 | International Journal of Medical Informatics, 127, 102-108 | United States | D: Cross-sectional<br>P: 39 health care professionals (13 primary care physicians and staff, 13 lab and radiology representatives, 6 clinic administrators, 1 patient safety personnel, and 6 informatics and information technology personnel)<br>S: 3 large health care systems in the state of Texas | Interview | | | | ♦ |
| Neame 2019 | Archives of Disease in Childhood, 104, A31-A32 | U.K. | D: Cross-sectional<br>P: 25 participants (16 professionals, 5 parents, 4 young people)<br>S: Children's hospital | Survey | | | ♦ | ♦ |
| Nielsen 2021 | Studies in Health Technology and Informatics, 286, 89-93 | Denmark | D: Cross-sectional<br>P: 100 participants selected to represent "average citizens"<br>S: Not specified | Video observation, survey (results reported only from survey) | ♦ | | ♦ | |

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| Noureldin 2022 | Gastroenterology, 162(7), S-409 | United States | D: Retrospective record review<br>P: 5,605 patients with inflammatory bowel diseases<br>S: Tertiary referral center | Review of portal utilization data & associated patient records | ♦ | ♦ | | |
| Nystrom 2017 | Diagnosis, 4(4), eA96-eA97 | United States | D: Live observational study<br>P: Current patient portal users (sample size not specified but report states 10 interviews and 3 live observations)<br>S: Not specified | Interview, live observation | | | ♦ | |
| Nystrom 2018 | eGEMs, 6(1), 15 | United States | D: Live observational study<br>P: 14 patients<br>S: Academic medical center | Interview, live observation, survey | | | ♦ | |
| Oest 2018 | Academic Pathology, 5, 9 | United States | D: Retrospective record review<br>P: 536,378 patients;<br>219,671 patient encounters<br>S: Rural academic medical center | Review of portal utilization data | ♦ | ♦ | | |
| Okawa 2017 | Journal of the American College of Radiology, 14(9), 1219-1221 | United States | D: Retrospective record review<br>P: 99,882 radiology reports available to patients via the patient portal during (also reported various subsamples)<br>S: Regional health system | Review of portal utilization data & associated patient records | ♦ | | | |
| Onuma 2019 | Surgery, 165(4), 782-788 | United States | D: Cross-sectional<br>P: 257 patients<br>S: Academic medical center | Survey | | | ♦ | |

| | | | | | Type of Data Collection | | | |
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| Perlis 2022 | Journal of Urology, 207(Suppl 5), e278-e279 | Canada | D: Randomized trial<br>P: 40 patients (20 experimental, 20 control)<br>S: Academic medical center | Survey | | | ♦ | |
| Petrovskaya 2023 | Journal of Medical Internet Research, 25, e43765 | Canada | D: Scoping review<br>P: 27 articles focused on patient and provider views on patient access to test results in portals | Literature review | | | ♦ | ♦ |
| Pho 2018 | JAMA Oncology, 4(3), 416-418 | United States | D: Cross-sectional<br>P: 19,434 patients<br>S: Comprehensive cancer center | Review of portal utilization data & associated patient records | ♦ | ♦ | | |
| Rahman 2022 | Sexually Transmitted Diseases, 49(4), 257-261 | United States | D: Retrospective record review and cross-sectional<br>P: 11,947 patients (subset of 258 interview participants)<br>S: State STD/HIV/hepatitis program | Review of portal utilization data, interview | ♦ | | ♦ | |
| Ramos 2023 | Journal of Medical Internet Research, 25, e42304 | Spain | D: Cross-sectional<br>P: 1,695 participants<br>S: Population-based telephone survey | Survey/ questionnaire | | ♦ | ♦ | |
| Reid 2022 | Chest, 162(4), A1613 | United States | D: Cross-sectional<br>P: 44 patients<br>S: Academic medical center | Survey | ♦ | | | |
| Rexhepi 2021 | Health Informatics Journal, 27(3), 11 | Sweden | D: Cross-sectional<br>P: 2,857 patients<br>S: National community sample | Survey | | | ♦ | |

| | | | | | Type of Data Collection | | | |
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| Reynolds 2023 | Applied clinical informatics, 14(4), 654-669 | United States | D: State-of-the-art review<br>P: 74 articles focused on recent developments in portal research and recommendations for portal design, implementation, and evaluation | Literature review | ♦ | ♦ | ♦ | ♦ |
| Robinson 2019 | BMJ Health & Care Informatics, 26(1), 0 | Canada | D: Cross-sectional<br>P: 21 patients<br>S: Regional health system | Interview | | | ♦ | |
| Rogers 2023 | Ultrasound (Leeds, England), 31(3), 164-175 | U.K. | D: Systematic review<br>P: 12 articles reporting 13 studies of patient experiences of imaging reports | Literature review | | | ♦ | |
| Sääskilahti 2021 | Journal of Medical Internet Research, 23(7), e25368 | Finland | D: Cross-sectional<br>P: 994 pharmacy customers<br>S: Outpatient pharmacies | Survey | ♦ | | ♦ | |
| Sabahi 2018 | Journal of Clinical Laboratory Analysis, 32(6), 1 | Iran | D: Cross-sectional<br>P: 95 patients<br>S: University hospital | Survey | | | ♦ | |
| Sabahi 2017 | American Journal of Managed Care, 23(4), E113-E119 | Iran | D: Cross-sectional<br>P: 200 patients<br>S: Academic medical center laboratory | Survey | | | ♦ | |
| Schnock 2019 | Journal of Medical Internet Research, 21(7), e13336 | United States | D: Randomized stepped-wedge design<br>P: 1,755 inpatients<br>S: Six acute care units in a single hospital | Review of portal utilization data, survey | ♦ | ♦ | ♦ | |
| Schultz 2017 | Pediatric Blood and Cancer, 64, S68 | United States | D: Cross-sectional<br>P: 15 caregivers of children with cancer<br>S: Children's hospital | Interview | | | ♦ | |

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| Schultz 2018 | Pediatric Blood and Cancer, 65(11), e27306 | United States | D: Cross-sectional<br>P: 19 caregivers of children with cancer<br>S: Children's hospital | Interview | | | ♦ | |
| Sharif 2020 | Journal of General Internal Medicine, 35(Suppl 1), S75 | United States | D: Retrospective record review<br>P: 62,610 patients<br>S: Federally qualified health center | Review of portal utilization data & associated medical records | ♦ | ♦ | | |
| Shucard 2020 | JAMA Dermatology, 156(3), 320-324 | United States | D: Cross-sectional<br>P: 160 dermatopathologists<br>S: National sample | Survey | | | | ♦ |
| Sisk 2023 | Pediatrics, 151(6), e2023061213 | United States | D: Cross-sectional<br>P: 65 informatics administrators<br>S: 63 US pediatric hospitals with 50+ beds | Interview | | | ♦ | ♦ |
| Steitz 2017 | Applied Clinical Informatics, 8(3), 779-793 | United States | D: Retrospective record review<br>P: 493,753 patient portal sessions initiated by 15,711 users (pediatric patients and caregivers)<br>S: Children's hospital | Review of portal utilization data | ♦ | | | |
| Steitz 2021 | JAMA Network Open, 4(10), 3 | United States | D: Retrospective record review<br>P: 294,799 patients<br>S: Academic medical center | Review of portal utilization data & patient-initiated messaging | ♦ | | | |
| Steitz 2023 | JAMIA, 30(10), 1707-1710 | United States | D: Retrospective record review<br>P: 368,831 unique patients who received 4,973,207 test results<br>S: Academic medical center | Review of portal utilization data | ♦ | ♦ | ♦ | |

| | | | | | Type of Data Collection | | | |
|---|---|---|---|---|---|---|---|---|
| **First Author Last Name and Year of Publication** | **Journal, Volume (Issue), Page Nos.** | **Country** | **Design (D) Participants/Sample (P) Setting (S)[1]** | **Mode of Data Collection** | **Portal Usage Data[2]** | **Portal User Characteristics** | **Patient Experiences, Attitudes, Preferences** | **Clinician Experiences, Attitudes, Preferences** |
| Steitz 2023 | JAMA Network Open, 6(3), e233572 | United States | D: Cross-sectional<br>P: 8,139 patients<br>S: Four academic medical centers | Survey/ questionnaire | ♦ | | ♦ | |
| Struikman 2020 | Journal of Medical Internet Research, 22(7), e15798 | Netherlands | D: Experimental<br>P: 487 participants<br>S: Health research panel | Survey | | | ♦ | |
| Sullivan 2022 | American Journal of Perinatology, 41(04), 511-514 | United States | D: Prospective, observational<br>P: 40 health care professionals (physicians, nurses, social workers)<br>S: Neonatal intensive care unit | Survey | | | | ♦ |
| Sun 2019 | Diabetes Technology and Therapeutics, 21(10), 581-588 | United States | D: Retrospective record review<br>P: 38,399 patients with type 2 diabetes<br>S: Ambulatory clinic in an academic medical center | Review of portal utilization data | ♦ | | | |
| Swisher 2020 | Journal of Clinical Oncology, 38(15 Suppl) | United States | D: Randomized trial<br>P: 3,822 patients undergoing genetic testing for hereditary cancer syndrome<br>S: Multisite clinical trial | Survey | | | ♦ | |
| Swoboda 2021 | Applied Clinical Informatics, 12(3), 573-581 | United States | D: Cross-sectional<br>P: 3,466 participants<br>S: National population survey | Survey | ♦ | ♦ | | |
| Talboom-Kamp 2020 | JMIR Formative Research, 4(3), e17060 | Netherlands | D: Cross-sectional<br>P: 354 patients<br>S: Primary care diagnostic center | Survey | | | ♦ | |

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| Ternald 2018 | Pediatric Blood and Cancer, 65, S633 | Sweden | D: Cross-sectional<br>P: Unknown number of survey respondents; 4 interview participants<br>S: Pediatric oncology ward | Interview | | | ♦ | |
| Tieu 2017 | Journal of the American Medical Informatics Association, 24(E1), E47-E54 | United States | D: Live observational study<br>P: 23 patients and 2 caregivers<br>S: Safety-net hospital | Interview | | | ♦ | |
| Tolentino 2023 | Computers, Informatics, Nursing: CIN, 41(11), 892-902 | United States | D: Cross-sectional<br>P: 3,865 adults<br>S: Nationally representative survey - US Health Information National Trends Surveys (HINTS) | Survey/ questionnaire | ♦ | | | |
| Tome 2021 | Kidney Medicine, 3(2), 231-240.e1 | United States | D: Cross-sectional<br>P: 245 patients with chronic kidney disease<br>S: Nephrology clinics at an academic medical center | Survey | ♦ | | | |
| Tossaint-Schoenmakers 2021 | JMIR Formative Research, 5(12), e25498 | Netherlands | D: Cross-sectional<br>P: 748 users of a patient portal for laboratory test results<br>S: Diagnostic center | Survey | | | ♦ | |
| Turer 2021 | Applied Clinical Informatics, 12(04), 954-959 | United States | D: Cross-sectional<br>P: 324 COVID-19 test recipients who were able to access results through a portal<br>S: Academic medical center | Survey | | | ♦ | |

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| Turer 2022 | Applied Clinical Informatics, 13(5), 1123-1130 | United States | D: Retrospective record review<br>P: 31,164 unique patients and 60,314 ED encounters<br>S: Academic emergency department | Review of portal utilization data and associated medical records | ♦ | ♦ | | |
| Turer 2023 | Academic Emergency Medicine, 30(S1), 208 | United States | D: Retrospective record review<br>P: 295,741 ED encounters<br>S: 5 emergency departments (3 academic, 2 community) in 3 geographic regions | Review of portal utilization data and associated medical records | ♦ | | | |
| Van Kuppenveld 2020 | Journal of Medical Internet Research, 22(2), e13622 | Netherlands | D: Retrospective record review<br>P: 63 incidents, 4 complaints, 2673 helpdesk requests, 50 survey responses<br>S: University-affiliated tertiary hospital | Survey, review of operational data including complaints and help desk queries | | | ♦ | ♦ |
| Wass 2019 | Health Informatics Journal, 25(1), 203-215 | Sweden | D: Cross-sectional<br>P: 56 survey respondents, 9 interviewees (all patients)<br>S: Three outpatient care sites | Survey, interview | ♦ | | ♦ | |
| Wieland 2023 | Journal of Cancer Education, 38(3), 895-899 | United States | D: Experimental (aim 1) and cross-sectional (aim 2)<br>P: 69 patients and 16 caregivers<br>S: Community cancer center | Survey | | | ♦ | |
| Wildenbos 2018 | Digital Health, 4, 2055207618797883 | Netherlands | D: Cross-sectional<br>P: 131 older adult patients<br>S: Academic medical center | Survey | | | ♦ | |

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| Williams 2018 | Journal of Genetic Counseling, 27(2), 358-369 | United States | D: Randomized trial<br>P: 84 parents of children undergoing genetic testing<br>S: Academic medical center | Survey, interview | ♦ | | ♦ | |
| Wood 2021 | Hospital Pediatrics, 11(6), 587-594 | United States | D: Retrospective record review<br>P: 5,862 unique patients<br>S: Children's hospital | Review of portal utilization data and associated medical records | ♦ | ♦ | | |
| Wood 2023 | Journal of Pathology Informatics, 14(), 100323 | United States | D: Retrospective record review<br>P: 204,605 patients; 2,064,774 tests in adult patients and 273,552 tests in pediatric patients.<br>S: Single academic medical center | Review of portal utilization data and associated medical records | ♦ | ♦ | | |
| Woolen 2019 | Radiology, 290(1), 136-143 | United States | D: Cross-sectional<br>P: 418 patients<br>S: Four outpatient imaging sites in 2 U.S. states | Survey | | | ♦ | |
| Yin 2023 | Journal of the American Geriatrics Society, 71(S1), S332-S333 | United States | D: Retrospective record review<br>P: 509,341 older adult patients<br>S: Large integrated health system | Review of portal utilization data and associated medical records | ♦ | ♦ | | |
| Zeng 2022 | Journal of Medical Internet Research, 24(9), e35828 | United States | D: Cross-sectional<br>P: 3,865 adults<br>S: Population-based survey | Survey | ♦ | ♦ | | |
| Zhang 2021a | Health Informatics Journal, 27(2), 14604582211011215 | United States | D: Live observational study<br>P: 13 adults with prior experience using patient portals<br>S: Unclear | Interview | | | ♦ | |

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| Zhang 2020 | Journal of Medical Internet Research, 22(12), e18725 | United States | D: Cross-sectional, mixed methods<br>P: 203 adults<br>S: Convenience sample recruited using Amazon mTurk | Survey, interview (n = 13) | | | ♦ | |
| Zhang 2021b | JMIR Human Factors, 8(4), e26017 | United States | D: Live observational study<br>P: 8 participants<br>S: Not specified | Interview | | | ♦ | |
| Zikmund-Fisher 2017 | Journal of the American Medical Informatics Association, 4(3), 520-528 | United States | D: Experimental<br>P: 1,620 patients<br>S: Convenience sample recruited from an Internet research panel | Survey | | | ♦ | |
| Zikmund-Fisher 2019 | Medical Decision Making, 39(7), 796-804 | United States | D: Cross-sectional<br>P: 327 physicians<br>S: Convenience sample recruited from an Internet research panel | Survey | | | | ♦ |

[1] Setting is not described for literature reviews and for studies that were based on multiple convenience sampling methods.
[2] Portal usage data refers to relative or absolute frequency of portal use to access test results and could be self-reported or determined through review of records or portal usage logs.
[3] Staff were included in data collection but were not asked specifically about using the portal to access test results.