Real-World Effectiveness of A Digital-Based Coaching Intervention for Cancer Survivors with Job Loss

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Abstract

Purpose:

Return-to-work (RTW) is a key unmet need for working age cancer survivors. This study sought to evaluate RTW outcomes of a multidisciplinary intervention provided as routine employee support.

Method:

In a retrospective cohort analysis, patients with cancer and more than 3 months absent from work were provided an intervention consisting of digital resources and calls with a health coach. A logit regression model was used to calculate a propensity score using covariates of age, gender, insurance benefit type, date of cancer diagnosis and time from diagnosis derived from insurance-claims data and captured as standard business practice. Participants were matched on a 1:1 basis using the nearest-neighbor method without replacement to create a matched control group from a further 1,856 participants who did not receive the intervention.

Results:

220 participants enrolled in the intervention, of which 125 met the criteria for analysis. The median follow-up from cancer diagnosis was 79 weeks (IQR 60-106). In the matched control group, 22 returned to work (17.6%) compared with 38 (30.4%) in the intervention group (P=.02). Nineteen matched controls died prior to claim closure (15.2%) compared with 13 in the intervention group (10.4%; P=.26). Cox model estimated median time for the first 15% of the cohorts to RTW was 87.1 weeks for the matched control (CI 60.0-109.1 weeks) compared with 70.6 weeks for the intervention (CI 52.6-79.6 weeks; P=.08).

Conclusion:

A digitally delivered coaching program in a real-world setting for patients diagnosed with cancer improves the likelihood of RTW.

Implications for cancer survivors: a remotely delivered coaching program in a real-world setting for cancer survivors can improve the likelihood of RTW.

Introduction

Early detection and sustained improvements in the treatment of many types of cancer have markedly improved survivorship rates [1]. Approximately 45% of cancer diagnoses occur in people of working age, between 20–64 years old [2, 3], and it is likely that the prevalence of cancer survivorship in the workforce will continue to increase.

For working age cancer survivors, impairments in physical and mental health may reduce their participation in work [4, 5]. Specifically, cancer survivors are at higher risk of unemployment [4, 6, 7],

reduced hours, prolonged absenteeism [8, 9] and impaired presenteeism [9] compared with individuals without a history of cancer. Returning to work is important for cancer survivors themselves, their employers and society at large. For cancer survivors, return-to-work (RTW) can improve their sense of 'normality', their self-respect [10] and quality of life [11–12]. Conversely, prolonged job loss increases the risk of financial toxicity, resulting from decreased earnings and increased health expenditure. Financial toxicity following a cancer diagnosis is associated with emotional distress, poor treatment adherence and a higher mortality risk [8]. From an employer and societal perspective, the RTW of knowledgeable and experienced workers enables continuity of a skilled labor pool, along with reduced productivity losses and decreased expenses like disability claim payments [13].

RTW has therefore become a pressing issue and key unmet need of this population. A previous meta-analysis of 5 multidisciplinary interventions that covered physical, psychoeducation and/or vocational components showed moderate evidence for improving RTW rates [14]. These interventions were provided from hospital settings to narrowly defined populations and delivered in-person, which is both time intensive and costly. Among 3 interventions identified in a systematic review for RTW interventions outside of the hospital setting [15], only one had a suitable comparison group and with no demonstrated effect [16]. Therefore, a paucity of evidence exists for multidisciplinary interventions provided as routine employment support that serve broad populations and adapt to the complexities and diversity of day-to-day cancer care and life in general.

In 2018, a multidisciplinary intervention delivered via digital resources and calls with a health coach was introduced by AIA Australia, a life and health insurance company, to its members with a disability insurance policy claim. This study sought to evaluate the long-term impact of the program on RTW outcomes as compared to usual care.

Methods

Study Design

The study is a propensity-score matched retrospective cohort analysis. Eligible AIA members were enrolled in the intervention, the CancerAid Coach Program, from October 2018 to February 2020. A comparison group was created using the below criteria and then abstracted from deidentified records of patients who did not participate in the intervention (Fig. 1).

Recruitment and eligibility criteria

From October 2018 to February 2020, during routine calls following lodgment of a disability claim for a cancer diagnosis, AIA staff had private conversations with potential participants to elicit their interest in participating in the intervention. Eligibility for a disability claim included patients who: i) were of working age (18–65); ii) held a disability insurance policy through their insurer (AIA Australia) that included coverage of a cancer diagnosis; iii) were working prior to diagnosis and were unable to work in their regular prediagnosis capacity for at least 3 months. Program enrolment involved the AIA staff member

eliciting interest and completing a secure web-form, followed by automated email outreach that included consent for the use of deidentified data for research purposes [17]. Inclusion criteria were defined as: i) completing enrolment and having at least one or more calls with a health coach; ii) a minimum follow-up time from diagnosis of 34 weeks to allow for completion of the intervention (median 10 weeks) along with delays in lodgment of the claim with the insurer (median 12 weeks) and a subsequent delay in referral to the CancerAid Coach Program (median 12 weeks); iii) diagnosis from top 10 commonest cancer types to enable adequate matching. Exclusion criteria were patients whose policies were later withdrawn or did not meet the eligibility criteria of their disability insurance policy.

Intervention

The CancerAid Coach Program provides a range of integrative therapies to help manage symptoms and adverse effects during or after treatment. The CancerAid Coach Program is based upon lifestyle and psychological interventions that are well established and consistent with ASCO guidelines (e.g. diet and exercise in survivors of cancer; peer support) [18, 19] or backed by evidence from large randomized trials (e.g. digital symptom tracking) [20].

The CancerAid Coach Program consists of an online e-health app and three telephone health coaching sessions delivered over a twelve-week period. Additionally, a series of weekly messages, via email and text, are sent to participants during the period of the intervention to help reinforce key health messages on appropriate symptom tracking, exercise, diet, mindfulness and sleep strategies. The CancerAid app allows patients to coordinate their care with tools to read about their condition, treatment options and a broader community of cancer survivors. It also allows patients to monitor their condition, specifically in relation to being able to track their symptoms digitally and monitor their diet, exercise, sleep and other patient level data at home via the app.

The health-coach team includes registered nurses, doctors and allied health professionals. Coaches offer a range of interventions tailored to the needs and current stage of each patient and use principles of behavioral change theories, such as the Transtheoretical model of Stages of Change [21]. These interventions include inviting patients to consider their current behavior; helping them consider the impacts of making change; providing encouragement, support and feedback on performance; encouraging patients to set further goals once existing goals are met, and finally, providing a framework of accountability.

Matched Comparison Group

The intervention group of Coach Program participants were matched on a one-to-one basis to a control group of nonparticipating insurance plan members who were otherwise eligible to participate using propensity scores. Controls were first collected from the AIA claims database over the same time period (October 2018 to February 2020) and using the same inclusion criteria: i) working age; ii) disability claim for a cancer diagnosis; iii) unable to work in their regular capacity for at least 3 months; iv) minimum follow-up time from diagnosis of 34 weeks; v) top 10 commonest cancer types. The likelihood of

participating in the Coach Program was estimated using logistic regression. Independent variables included: age, gender, cancer diagnosis, date of cancer diagnosis, time to lodgment, insurance benefit type, occupation and designated regional area from 1 (major cities) to 3 (regional centres) [22].

A logit regression model was used to calculate a propensity score for each participant, to predict the probability that they would be referred to the CancerAid group. The covariates of the propensity model included age, gender, insurance benefit type, date of cancer diagnosis and time from diagnosis to lodgment of claim. Using the propensity scores, CancerAid participants were matched on a 1:1 basis using the nearest-neighbor method without replacement, to create a matched control group. The baseline characteristics were then re-assessed for imbalance between the CancerAid and the matched control group.

Assessment and Outcomes

Outcome measures were derived from insurance-claims data as standard business practice. Primary outcomes were the rate and time from cancer diagnosis to claim closure where the reason for claim closure was the successful RTW of the patient. Death and other reasons for claim closure were assessed. Other reasons for claim closure were a single lump sum payment (compared to scheduled salary replacement), expiry of benefit period (meaning the insurance policy had expired as set out in the policy's schedule), no longer meeting the definition of disability (ie. return to health but not work) and abandonment of the claim.

Statistical Analyses

Statistical analysis was performed in R (Version 4.0.3). Difference in final RTW rate was tested using a chi-squared test without Yates correction. Time from diagnosis to RTW claim closure was calculated using a Kaplan-Meier model with a log-rank test.

Results

A total of 220 participants were enrolled in the intervention, of whom 125 met criteria for this analysis (Fig. 2). A further 3,749 participants who did not receive the intervention over the same time period were identified from the insurer's records. Of these, 1,856 control group participants met the criteria for analysis (Fig. 2). There were observed imbalances between the intervention and control cohort's baseline characteristics, including sex, tumor origin, regional area and benefit period. Based on 1:1 matching with nearest neighbor matching, 125 intervention patients were matched to 125 control patients. After propensity score matching, sex, tumor origin and benefit period were no longer significantly different (Table 1). Among tumor origin, breast, colon, brain and ovary were the most common for both groups. Regional area was significantly different between groups, with 42.4% of intervention participants being category 1, major cities, vs 28.8% of control participants ($P = .03$). However, a separate analysis revealed there was no correlation between the regional areas and any of the primary outcomes, including RTW ($P = .43$), for control or intervention groups.

Efficacy outcomes are listed in Table 2 and illustrated in Fig. 3. The median follow-up since cancer diagnosis was 79 weeks (IQR 60–106). In the matched control group, 22 returned to work (17.6%) compared with 38 (30.4%) in the intervention group ($P = .02$). Nineteen matched control participants died prior to claim closure (15.2%) compared with 13 in the intervention group (10.4%; $P = .26$). When considering survivorship only, the RTW rate was 33.9% (38 of 112) for the intervention group compared with 20.8% (22 of 106) for the matched control group ($P = .03$). Table 3 shows the reasons for claim closure, other than RTW. Expiry of benefit period and abandonment of a disability claim were the most cited reasons for claims closure in both control and intervention groups.

The cumulative event plot of RTW for the matched participants are presented in Fig. 3. Based on the matched population, the estimated Cox proportional hazard ratio for the intervention group was 1.61 (95% CI, 0.95–2.73; $P = .08$) compared with the control group. The Cox model used the same covariates as used in the propensity logit model (age, gender, date of cancer diagnosis, time to lodgment and benefit type). Further analysis shows estimated RTW rate at 2 years after a cancer diagnosis is 33.1% (CI 22.4–42.3%) for the intervention group compared with 22.6% for the control group (CI 12.3–31.8%). The median time for the first 15% of the cohorts to RTW was 70.6 weeks (CI 52.6–79.6 weeks) for the intervention compared with 87.1 weeks (CI 60.0–109.1 weeks) for the matched control.

Discussion

This study evaluated the impact of a remotely delivered coaching program combined with digital support for patients diagnosed with cancer. An increase of 12.8% in the RTW rate was identified for coach program participants over an 18-month period compared with matched controls. These results are consistent with clinical-based trials of in-person multidisciplinary interventions that have been shown to enhance RTW [14]. Furthermore, this study demonstrates that support programs can be effectively implemented as part of routine employment support and remotely delivered outside of the hospital setting. Median time to RTW showed a non-significant trend favoring coach program participants vs matched controls. A maturing dataset and/or greater study numbers may in time reveal any true effect (or not) of the program intervention on median time.

The RTW rates identified in the present study is comparable to existing literature when factoring a baseline minimum of 3 months absent from work and a definition of returning to a prediagnosis work capacity at 1.5 years (33.9% for intervention group; 20.8% for matched controls). For example, large cohort studies have shown approximately 60% of cancer survivors successfully RTW at 1–2 years post-cancer diagnosis but noting that a majority will be at reduced hours either permanently or over a time limited period [6, 7, 23–25]. Another important difference between the present study and cohort studies that may underestimate the true rate of RTW among cancer survivors is that some individuals diagnosed with cancer may remain employed and/or have adequate leave (e.g. sick leave, annual leave) that avoids the need for a claim on their disability insurance policy. Finally, the present study precluded those with an early claim closure (less than 34 weeks), to allow for a suitable referral period for the intervention, which would similarly underestimate the true rate of RTW among working age cancer survivors.

Returning cancer survivors to the workplace mitigates against financial toxicity for the individual whilst reducing the economic burden of cancer to payers and employers [26]. This study adds to the existing evidence of cost-effective coaching interventions that are delivered remotely and for the routine support of employees with other chronic diseases, such as cardiovascular and respiratory diseases, and diabetes [27–32]. Notably, cost savings have not been demonstrated with low-intensity coaching (average of 2 calls each) and delivered over 12-months or less [29–31]. For the present study, no difference between the intervention and matched controls for RTW was observed up to 12 months post-diagnosis (see Fig. 1). A likely explanation for this is that receiving active treatments, especially in combination and with associated toxicities, is a known factor of impairing short-term work ability [6, 33] and is unlikely to be immediately amenable to improvements in self-management. Beyond these earlier months after a cancer diagnosis, work ability is far more likely to improve [4, 23], although still impaired for many individuals, hence this period is far more likely to see the results of behavior change and adoption of self-management principles.

Employment after a cancer diagnosis is an important social determinant of health [3] and is associated with improved quality of life and the magnitude of the cancer health burden [11, 12, 34]. Hence, a coaching support that is implemented as part of routine care and made accessible to broader populations will typically provide reductions in medical expenditure.

This study has several limitations. Individuals were not randomized to participate, hence there may be differences in motivation for opting to participate in the program versus the matched control group and that could not be balanced out through propensity score matching. Other researchers have shown that the wish to participate in support programs is usually an indicator of the need for greater assistance with their health and knowledge [35]. Socioeconomic status, which may substantially differ between coaching participants and controls, was not available for use in the propensity score models. However, program participants and matched controls had comparable rates of occupation. Similarly, propensity scores were performed for benefits type, as an indication of their level of insurance and by proxy their income; both of these factors would likely address socioeconomic status. Finally, an overrepresentation of females, likely a result of opting in, occupation and inclusion of top 10 cancer types, somewhat reduces the generalizability of these results.

This study indicates that a remotely delivered coaching program in a real-world setting for patients diagnosed with cancer improves the likelihood of RTW. The results of this study add to the literature of cancer as a chronic and manageable disease in the workplace.

Declarations

Funding

No funds, grants, or other support was received.

Conflicts of Interest

MB is also a clinical advisor of CancerAid. The remaining authors made no disclosures.

Ethics Approval

Not applicable. The data used in this study are owned by AIA Australia and were collected by AIA Australia as part of their usual business conduct.

Consent to Participate

Not applicable. All data is captured with permission and has been deidentified and aggregated prior to analysis.

Consent for Publication

All authors agree to a publication with Supportive Care in Cancer.

Availability of Data and Material

We will provide deidentified data to an open database sources/ publicly available repository for third-party assessment with acceptance of this publication.

Code Availability

The CancerAid online e-health app is freely available for cancer survivors and carers to download from:

- iOS: https://apps.apple.com/us/app/canceraid/id1138574844
- Android: https://play.google.com/store/apps/details?id=au.com.canceraid&hl=en_AU&gl=US

Author Contributions

Jonathon Lo: data curation, investigation, methodology, project administration, validation, visualization, writing-original draft, writing-review and editing. **Kieran Ballurkar**: data curation, formal analysis, investigation, validation, visualization, writing-review and editing. **Simonie Fox**: conceptualisation, investigation, methodology, writing-review and editing. **Kate Tynan**: conceptualisation, data curation, methodology, writing-review and editing. **Nghiep Luu**: data curation, methodology, writing-review and editing. **Michael Boyer**: investigation, methodology, writing-review and editing. **Raghav Murali-Ganesh**:

conceptualisation, investigation, methodology, validation, visualization, resources, project administration, writing-review and editing.

References

1. Siegel R, Naishadham D, Jemal A. Cancer statistics, 2013. *CA Cancer J Clin*. Jan 2013;63(1):11-30. doi:10.3322/caac.21166
2. National Cancer Institute. Surveillance, epidemiology and end results (SEER) program: National Institutes of Health. Accessed April 9, 2021, https://seer.cancer.gov/
3. Australian Institute of Health and Welfare. Cancer Data in Australia. Accessed April 9, 2021, https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia/contents/summary
4. de Boer AG, Verbeek JH, Spelten ER, et al. Work ability and return-to-work in cancer patients. *Br J Cancer*. Apr 22 2008;98(8):1342-7. doi:10.1038/sj.bjc.6604302
5. Short PF, Vasey JJ, Tunceli K. Employment pathways in a large cohort of adult cancer survivors. *Cancer*. Mar 15 2005;103(6):1292-301. doi:10.1002/cncr.20912
6. Mehnert A. Employment and work-related issues in cancer survivors. *Crit Rev Oncol Hematol*. Feb 2011;77(2):109-30. doi:10.1016/j.critrevonc.2010.01.004
7. Spelten ER, Sprangers MA, Verbeek JH. Factors reported to influence the return to work of cancer survivors: a literature review. *Psychooncology*. Mar-Apr 2002;11(2):124-31. doi:10.1002/pon.585
8. Blinder VS, Gany FM. Impact of Cancer on Employment. *J Clin Oncol*. Feb 1 2020;38(4):302-309. doi:10.1200/JCO.19.01856
9. Soejima T, Kamibeppu K. Are cancer survivors well-performing workers? A systematic review. *Asia Pac J Clin Oncol*. Dec 2016;12(4):e383-e397. doi:10.1111/ajco.12515
10. Stergiou-Kita M, Grigorovich A, Tseung V, et al. Qualitative meta-synthesis of survivors' work experiences and the development of strategies to facilitate return to work. *J Cancer Surviv*. Dec 2014;8(4):657-70. doi:10.1007/s11764-014-0377-z
11. Mols F, Vingerhoets AJ, Coebergh JW, van de Poll-Franse LV. Quality of life among long-term breast cancer survivors: a systematic review. *Eur J Cancer*. Nov 2005;41(17):2613-9. doi:10.1016/j.ejca.2005.05.017
12. Tamminga SJ, Bultmann U, Husson O, Kuijpens JL, Frings-Dresen MH, de Boer AG. Employment and insurance outcomes and factors associated with employment among long-term thyroid cancer survivors: a population-based study from the PROFILES registry. *Qual Life Res*. Apr 2016;25(4):997-1005. doi:10.1007/s11136-015-1135-z
13. de Rijk A, Amir Z, Cohen M, et al. The challenge of return to work in workers with cancer: employer priorities despite variation in social policies related to work and health. *J Cancer Surviv*. Apr 2020;14(2):188-199. doi:10.1007/s11764-019-00829-y
14. de Boer AG, Taskila TK, Tamminga SJ, Feuerstein M, Frings-Dresen MH, Verbeek JH. Interventions to enhance return-to-work for cancer patients. *Cochrane Database Syst Rev*. Sep 25 2015;(9):CD007569.

doi:10.1002/14651858.CD007569.pub3

15. Lamore K, Dubois T, Rothe U, et al. Return to Work Interventions for Cancer Survivors: A Systematic Review and a Methodological Critique. *Int J Environ Res Public Health*. Apr 14 2019;16(8)doi:10.3390/ijerph16081343
16. van Egmond MP, Duijts SF, Jonker MA, van der Beek AJ, Anema JR. Effectiveness of a tailored return to work program for cancer survivors with job loss: results of a randomized controlled trial. *Acta Oncol*. Sep - Oct 2016;55(9-10):1210-1219. doi:10.1080/0284186X.2016.1213417
17. CancerAid. Policy Terms. Accessed April 9, 2021, https://www.canceraid.com/privacy-policy/terms
18. Lyman GH, Greenlee H, Bohlke K, et al. Integrative Therapies During and After Breast Cancer Treatment: ASCO Endorsement of the SIO Clinical Practice Guideline. *J Clin Oncol*. Sep 1 2018;36(25):2647-2655. doi:10.1200/JCO.2018.79.2721
19. Andersen BL, DeRubeis RJ, Berman BS, et al. Screening, assessment, and care of anxiety and depressive symptoms in adults with cancer: an American Society of Clinical Oncology guideline adaptation. *J Clin Oncol*. May 20 2014;32(15):1605-19. doi:10.1200/JCO.2013.52.4611
20. Basch E, Deal AM, Kris MG, et al. Symptom Monitoring With Patient-Reported Outcomes During Routine Cancer Treatment: A Randomized Controlled Trial. *J Clin Oncol*. Feb 20 2016;34(6):557-65. doi:10.1200/JCO.2015.63.0830
21. Samdal GB, Eide GE, Barth T, Williams G, Meland E. Effective behaviour change techniques for physical activity and healthy eating in overweight and obese adults; systematic review and meta-regression analyses. *Int J Behav Nutr Phys Act*. Mar 28 2017;14(1):42. doi:10.1186/s12966-017-0494-y
22. Australian Government. Designated regional area postcodes. Accessed April 9, 2021, https://immi.homeaffairs.gov.au/visas/working-in-australia/skill-occupation-list/regional-postcodes
23. Taskila T, Lindbohm ML. Factors affecting cancer survivors' employment and work ability. *Acta Oncol*. 2007;46(4):446-51. doi:10.1080/02841860701355048
24. Landeiro LCG, Gagliato DM, Fede AB, et al. Return to work after breast cancer diagnosis: An observational prospective study in Brazil. *Cancer*. Dec 15 2018;124(24):4700-4710. doi:10.1002/cncr.31735
25. Blinder VS, Patil S, Thind A, et al. Return to work in low-income Latina and non-Latina white breast cancer survivors: a 3-year longitudinal study. *Cancer*. Mar 15 2012;118(6):1664-74. doi:10.1002/cncr.26478
26. Silver JK, Baima J, Newman R, Galantino ML, Shockney LD. Cancer rehabilitation may improve function in survivors and decrease the economic burden of cancer to individuals and society. *Work*. 2013;46(4):455-72. doi:10.3233/WOR-131755
27. Wennberg DE, Marr A, Lang L, O'Malley S, Bennett G. A randomized trial of a telephone care-management strategy. *N Engl J Med*. Sep 23 2010;363(13):1245-55. doi:10.1056/NEJMsa0902321
28. Chen F, Su W, Becker SH, et al. Clinical and Economic Impact of a Digital, Remotely-Delivered Intensive Behavioral Counseling Program on Medicare Beneficiaries at Risk for Diabetes and

Cardiovascular Disease. *PLoS One*. 2016;11(10):e0163627. doi:10.1371/journal.pone.0163627

29. Byrnes J, Elliott T, Vale MJ, Jelinek MV, Scuffham P. Coaching Patients Saves Lives and Money. *Am J Med*. Apr 2018;131(4):415-421 e1. doi:10.1016/j.amjmed.2017.10.019
30. Byrnes JM, Goldstein S, Venator B, et al. The impact of population-based disease management services for selected chronic conditions: the Costs to Australian Private Insurance–Coaching Health (CAPICHe) study protocol. *BMC Public Health*. Feb 10 2012;12:114. doi:10.1186/1471-2458-12-114
31. Su W, Chen F, Dall TM, Iacobucci W, Perreault L. Return on Investment for Digital Behavioral Counseling in Patients With Prediabetes and Cardiovascular Disease. *Prev Chronic Dis*. Jan 28 2016;13:E13. doi:10.5888/pcd13.150357
32. Jonk Y, Lawson K, O'Connor H, et al. How effective is health coaching in reducing health services expenditures? *Med Care*. Feb 2015;53(2):133-40. doi:10.1097/MLR.0000000000000287
33. Dumas A, Vaz Luis I, Bovagnet T, et al. Impact of Breast Cancer Treatment on Employment: Results of a Multicenter Prospective Cohort Study (CANTO). *J Clin Oncol*. Mar 1 2020;38(7):734-743. doi:10.1200/JCO.19.01726
34. Mahumud RA, Alam K, Dunn J, Gow J. The changing relationship between health burden and work disability of Australian cancer survivors, 2003-2017: evidence from a longitudinal survey. *BMC Public Health*. Apr 22 2020;20(1):548. doi:10.1186/s12889-020-08710-9
35. Berglund G, Bolund C, Gustafsson UL, Sjoden PO. Is the wish to participate in a cancer rehabilitation program an indicator of the need? Comparisons of participants and non-participants in a randomized study. *Psychooncology*. Mar 1997;6(1):35-46. doi:10.1002/(SICI)1099-1611(199703)6:1<35::AID-PON241>3.0.CO;2-J

Tables

Table 1. Baseline Demographic and Clinical Characteristics

	All Participants (%)			Propensity Score Matched (%)		
Characteristics	Control (n = 1856)	Intervention (n = 125)	P	Control (n = 125)	Intervention (n = 125)	P
Age, years			0.96			0.56
Median	52	53		53	53	
IQR	45–59	45–58		47–59	45–58	
Sex			< 0.01			0.33
Female	1513 (81.5)	114 (91.2)		118 (94.0)	114 (91.2)	
Male	343 (18.5)	11 (8.8)		7 (6)	11 (8.8)	
Regional Category			0.04			0.03
1	663 (35.7)	53 (42.4)		36 (28.8)	53 (42.4)	
2	668 (36.0)	31 (24.8)		48 (38.4)	31 (24.8)	
3	525 (28.3)	41 (32.8)		41 (32.8)	41 (32.8)	
Tumor origin			0.03			0.27
Breast	911 (49.1)	76 (60.8)		66 (52.8)	76 (60.8)	
Brain	147 (7.9)	6 (4.8)		9 (7.2)	6 (4.8)	
Colon	258 (13.9)	17 (13.6)		15 (12)	17 (13.6)	
Hodgkin lymphoma	68 (3.7)	6 (4.8)		4 (3.2)	6 (4.8)	
Non-Hodgkin lymphoma	60 (3.2)	5 (4.0)		7 (5.6)	5 (4.0)	
Ovary	90 (4.8)	7 (5.6)		7 (5.6)	7 (5.6)	
Pancreas	71 (3.8)	5 (4.0)		4 (3.2)	5 (4.0)	
Prostate	59 (3.2)	0 (0)		0 (0)	0 (0)	
Rehabilitation referral			0.13			0.70
No	1165 (62.8)	70 (56.0)		67 (53.6)	70 (56.0)	

Table 1. Baseline Demographic and Clinical Characteristics					
Yes	691 (37.2)	55 (44.0)	58 (46.4)	55 (44.0)	
Benefit Period		0.03			0.70
1 Year	7 (0.4)	0 (0.0)	1 (0.8)	0 (0.0)	
2 Years	523 (26.4)	23 (18.4)	25 (20.0)	23 (18.4)	
5 Years	120 (6.1)	7 (5.6)	4 (3.2)	7 (5.6)	
Age 60	616 (31.1)	51 (40.8)	43 (34.4)	51 (40.8)	
Age 65	216 (10.9)	7 (5.6)	9 (7.2)	7 (5.6)	
Age 67	486 (24.5)	35 (28.0)	42 (33.6)	35 (28.0)	
Age 70	3 (0.2)	0 (0.0)	1 (0.8)	0 (0.0)	
Occupation Category		0.21			0.37
Armed forces occupations	2 (0.1)	0 (0.0)	0 (0)	0 (0.0)	
Clerical support workers	206 (11.1)	16 (12.8)	16 (12.8)	16 (12.8)	
Craft and related trades workers	57 (3.1)	3 (2.4)	3 (2.4)	3 (2.4)	
Elementary occupations	88 (4.7)	3 (2.4)	4 (3.2)	3 (2.4)	
Managers	194 (10.5)	10 (8.0)	11 (8.8)	10 (8.0)	
Plant and machine operators, and assemblers	31 (1.7)	3 (2.4)	1 (0.8)	3 (2.4)	
Professional	416 (22.4)	21 (16.8)	36 (28.8)	21 (16.8)	
Service and sales workers	592 (31.9)	50 (40.0)	39 (31.2)	50 (40.0)	
Skilled agricultural, forestry and fishery workers	6 (0.3)	2 (1.6)	0 (0.0)	2 (1.6)	
Technicians and associate professionals	243 (13.1)	17 (13.6)	14 (11.2)	17 (13.6)	
Unknown	21 (1.1)	0 (0.0)	1 (0.8)	0 (0.0)	

Table 1. Baseline Demographic and Clinical Characteristics

Abbreviations: IQR, interquartile range

Table 2. Efficacy Outcomes

	Propensity Score Matched (%)		
Characteristics	Control (n = 125)	Intervention (n = 125)	P
RTW			
Number	22 (17.6)	38 (30.4)	0.018
Duration, median (weeks)	60	71	0.62
Duration, IQR (weeks)	49–88	49–94	
Claim Closure (non-RTW nor death)			
Number	20 (16.0)	16 (12.8)	0.12
Duration, median (weeks)	68	71	0.62
Duration, IQR (weeks)	55–99	49–94	
Claim Open			
Number	64 (51.2)	58 (46.4)	0.71
Death			
Number	19 (15.2)	13 (10.4)	0.26

Table 3. Claim Closure Outcomes (Other Than RTW or Death)

	Propensity Score Matched	
Claim Closure Reason	Control (n = 125)	Intervention (n = 125)
Abandoned	8	5
No longer meets the definition of disability	5	1
Expiry of benefit period	7	9
Lump sum paid	0	1

Figures

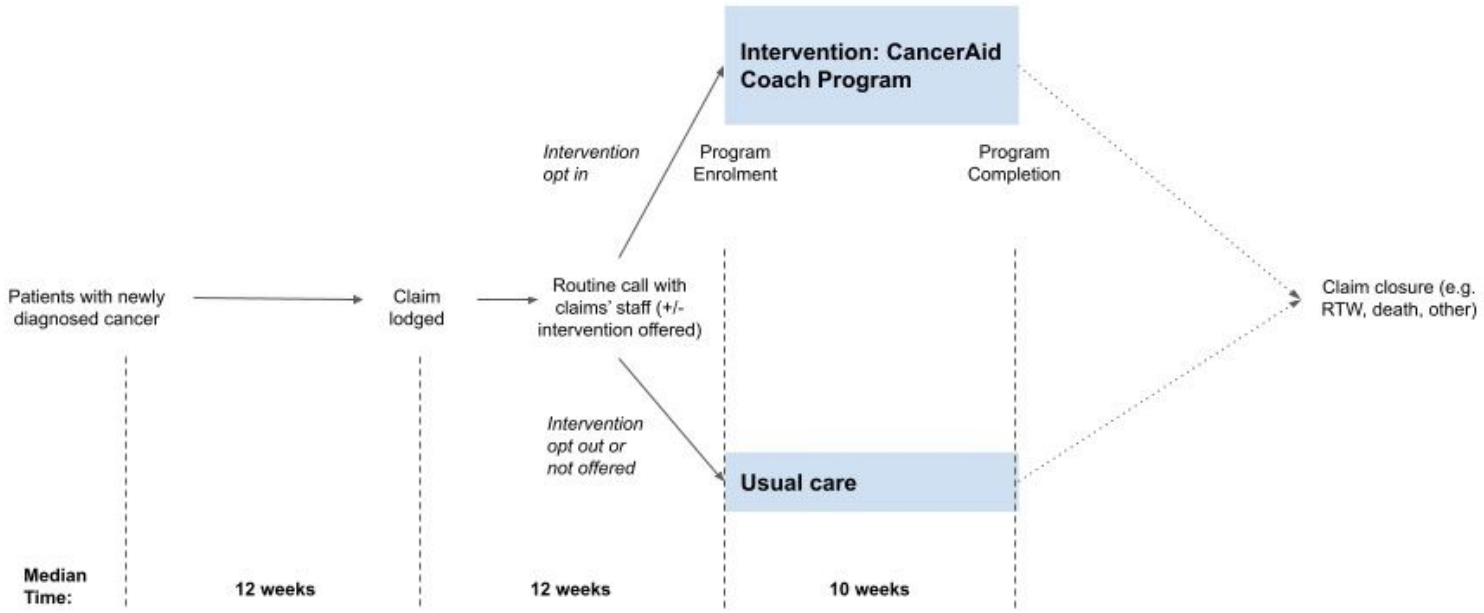

Figure 1

Trial design and median times. RTW, return-to-work.

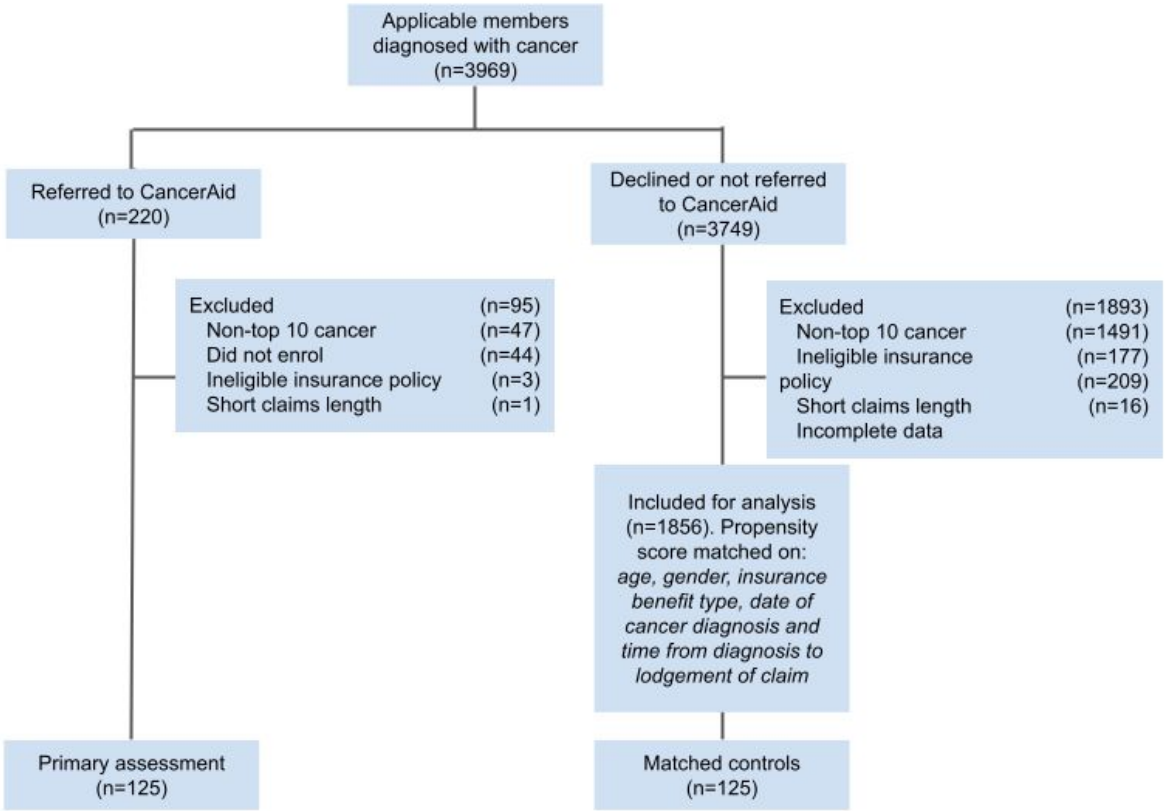

Figure 2

Patient flow.

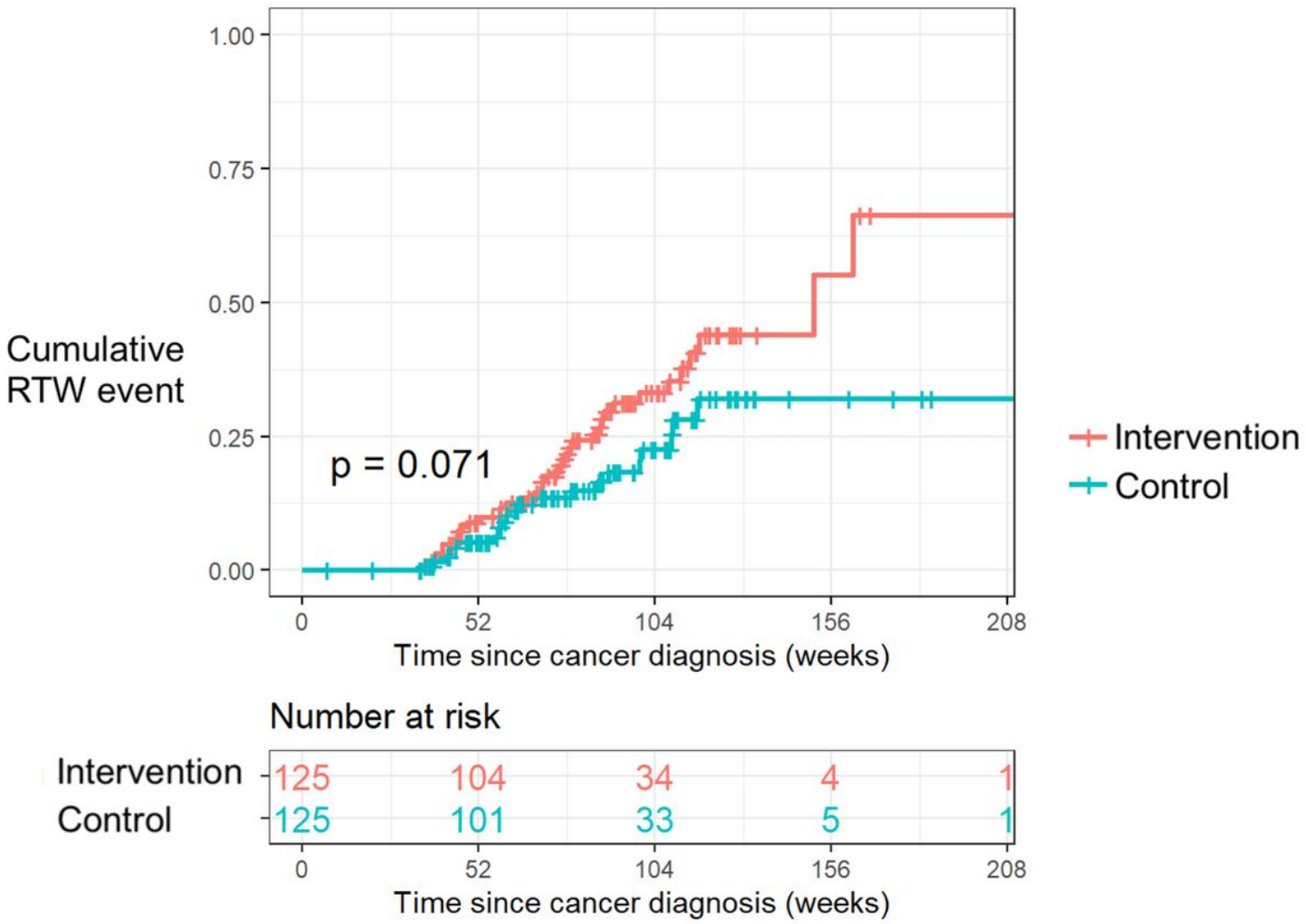

Figure 3

Cumulative event plot of return-to-work for intervention vs matched control groups.