# The Alberta Moving Beyond Breast Cancer (AMBER) Cohort Study: Recruitment, Assessment, and Description of the First 1402 Participants

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## BACKGROUND

The Alberta Moving Beyond Breast Cancer (AMBER) study is a novel cohort study collecting data on physical activity (PA), sedentary behavior, health-related fitness (HRF), and biologic mechanisms in breast cancer survivors. The aim is to understand the role of physical activity and health-related fitness in breast cancer survivorship.

## OBJECTIVES

The purpose is to describe the baseline participant characteristics, assessment completion and retention rates of the first 1402 participants recruited into the AMBER Study.

## METHODS

### Participants

- Newly diagnosed stage I (≥T1c) to IIIc female breast cancer survivors, <80 years, not pregnant, with baseline assessments within 90 days of surgery
- Breast cancer cases identified through Alberta Cancer Research Biobank (Calgary) and Cross Cancer Institute (Edmonton)

### Data Collection*

(1) Administration of questionnaires and activity monitors (ActigraphGT3X® and activPAL®)
(2) Completion of health-related fitness testing (cardiorespiratory fitness, upper/ lower body strength/endurance, flexibility)
(3) Anthropometrics/DXA scans (body fat)
(4) Lymphedema/upper body function
(5) Blood samples collected pre/post-surgery (pre-surgery preferred)

*All measurements collected at baseline, 1 and 3 years post-diagnosis. At 5 years post-diagnosis, only questionnaires completed.

Medical chart abstraction for staging, treatments, co-morbidities, new cancers, recurrences/progression data at 10 years post-diagnosis.



Figure 1. AMBER study projected timeline.

## RESULTS



Figure 2. Recruitment of the first 1402 in the AMBER study, Alberta, 2012-December 31, 2018.

## RESULTS

| Baseline characteristics | Calgary (n=794) | Edmonton (n=608) | Total (n=1402) |
|---|---|---|---|
| Age at diagnosis (n=1402) | 55.5 ± 11.3 | 54.2 ± 10.3 | 54.9 ± 10.9 |
| Marital status (n=1394) | | | |
| Married/common law | 570 (72.0%) | 460 (76.0%) | 1030 (73.9%) |
| Not married | 222 (28.0%) | 142 (24.0%) | 364 (26.1%) |
| Education (n=1361) | | | |
| ≤High school | 164 (21.5%) | 138 (23.1%) | 302 (22.2%) |
| ≥University | 599 (78.5%) | 460 (76.9%) | 1059 (77.8%) |
| Menopausal status (n=1323) | | | |
| Premenopausal | 292 (38.9%) | 230 (40.2%) | 522 (39.5%) |
| Postmenopausal | 459 (61.1%) | 342 (59.8%) | 801 (60.5%) |
| Weight, kg (n=1402) | 73.9 ± 15.5 | 74.1 ± 16.1 | 74.0 ± 15.8 |
| Body mass index, kg/m² (n=1402) | 27.6 ± 5.5 | 27.6 ± 5.8 | 27.6 ± 5.6 |
| Normal weight (< 25 kg/m²) | 292 (36.8%) | 233 (38.3%) | 525 (37.5%) |
| Overweight (25-30kg/m²) | 273 (34.4%) | 209 (34.4%) | 482 (34.4%) |
| Obese (>30 kg/m²) | 229 (28.8%) | 166 (27.3% | 395 (28.2%) |
| First degree family history of breast cancer (n=1368) | | | |
| ≥ one first degree relative | 535 (68.9%) | 443 (75.0%) | 978 (71.5%) |
| No first degree relatives | 242 (31.2%) | 148 (25.0%) | 390 (28.5%) |

Table 1. Baseline descriptive characteristics of the first 1402 participants in the AMBER study, Alberta, 2012 - December 31, 2018. Values are means ± SD or n (%) within each study site and overall.
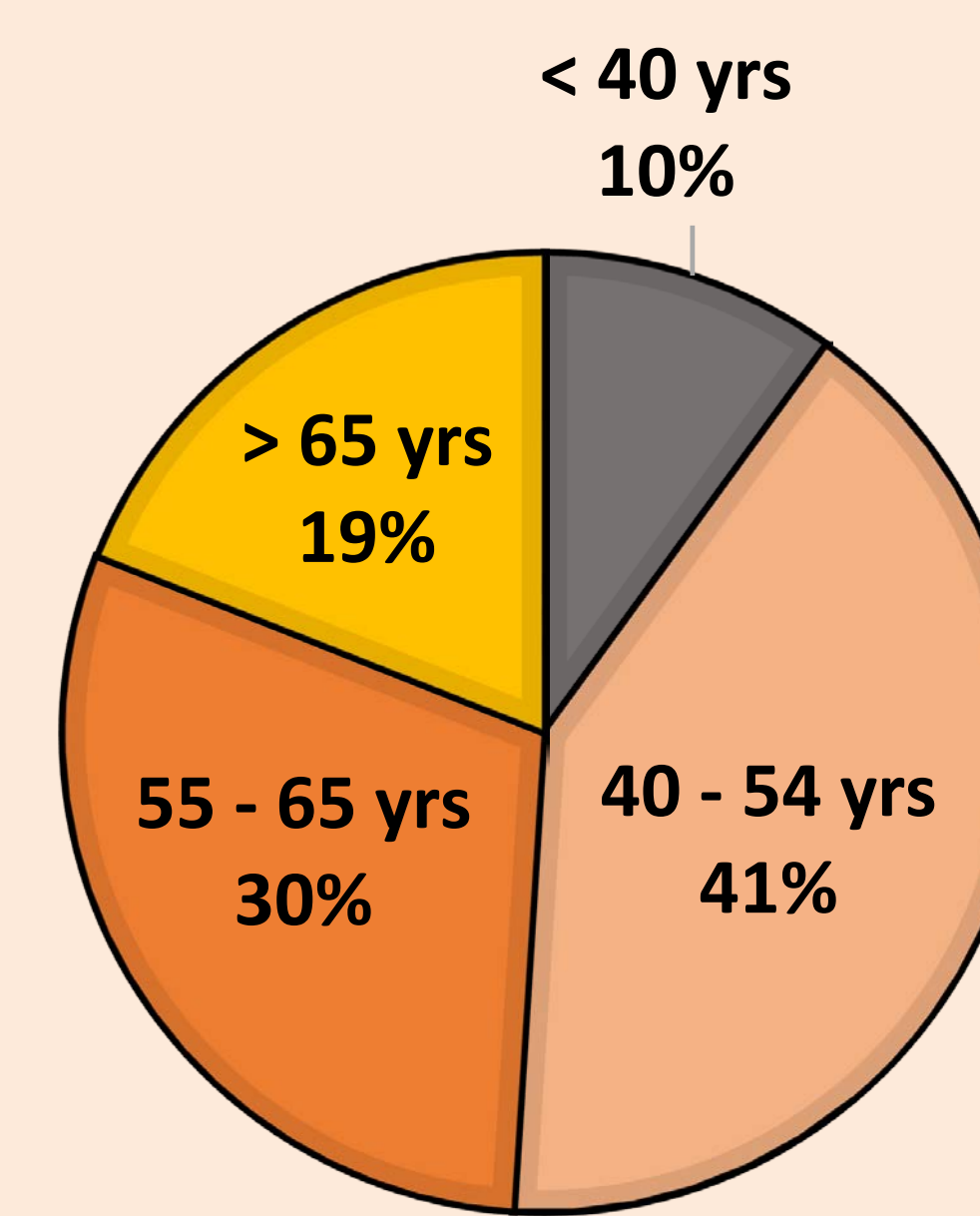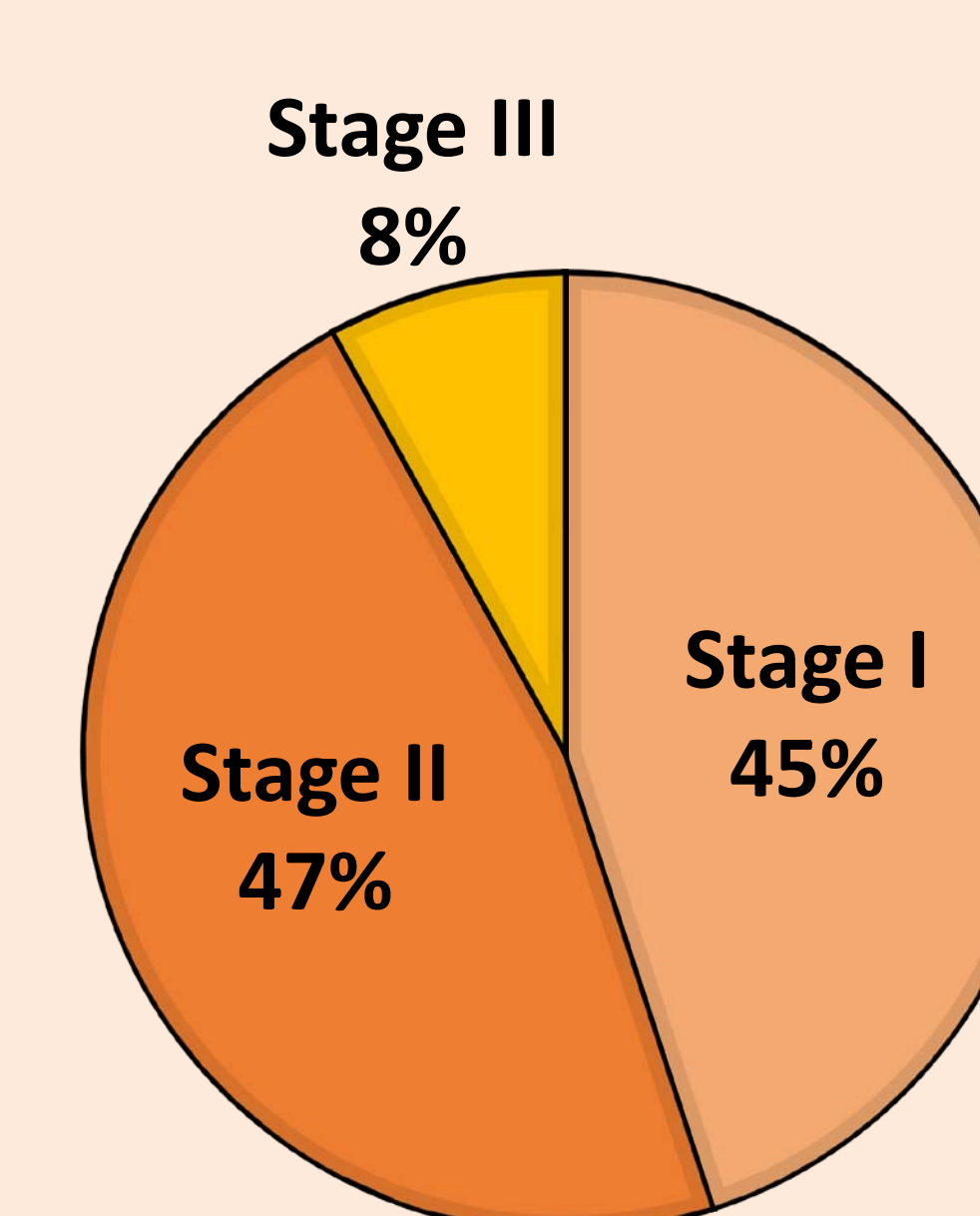


Figure 3. Age at diagnosis (n=1402)
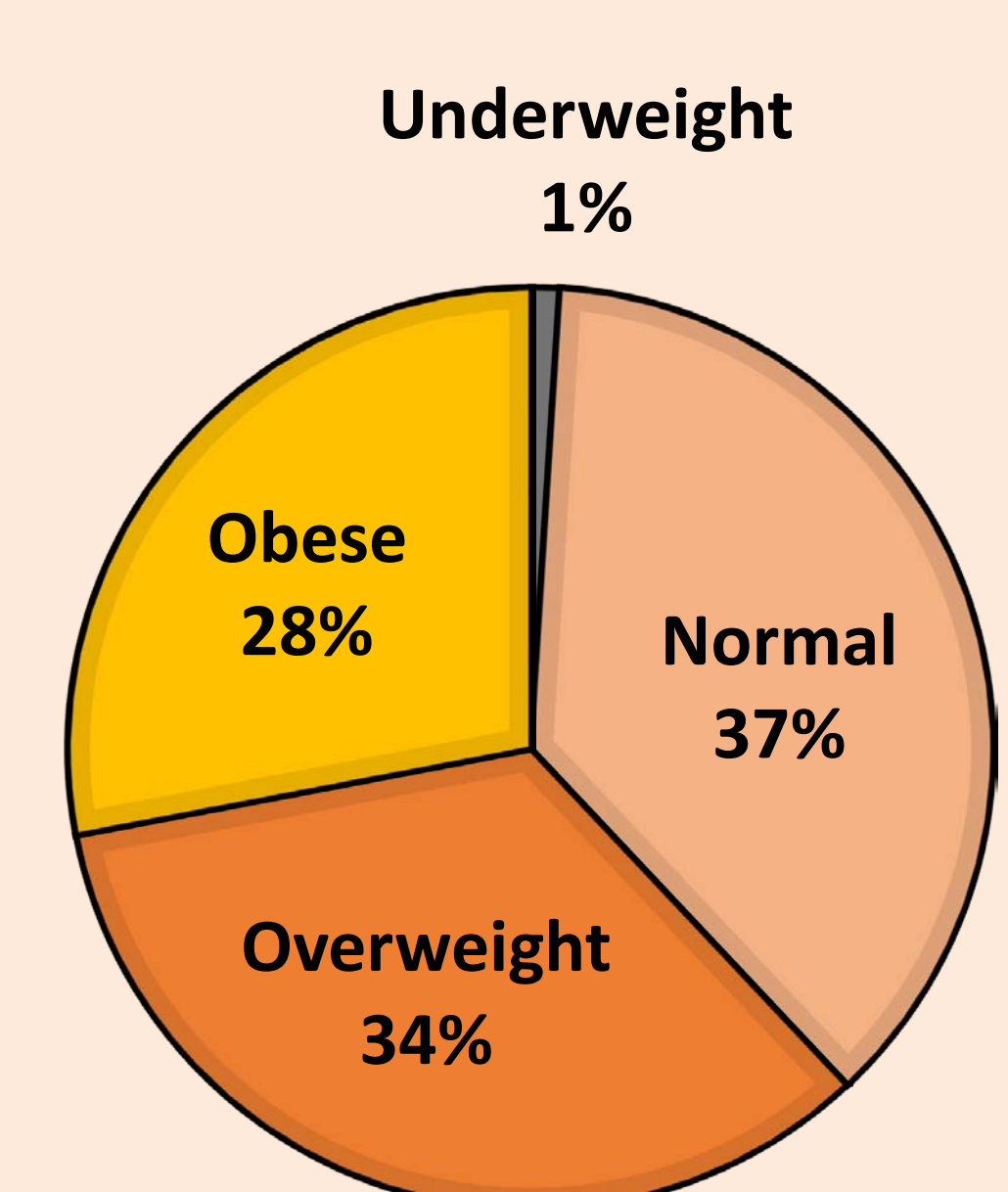
Figure 4. Stage at diagnosis (n=1402)

Figure 5. BMI Classification at diagnosis (n=1402)

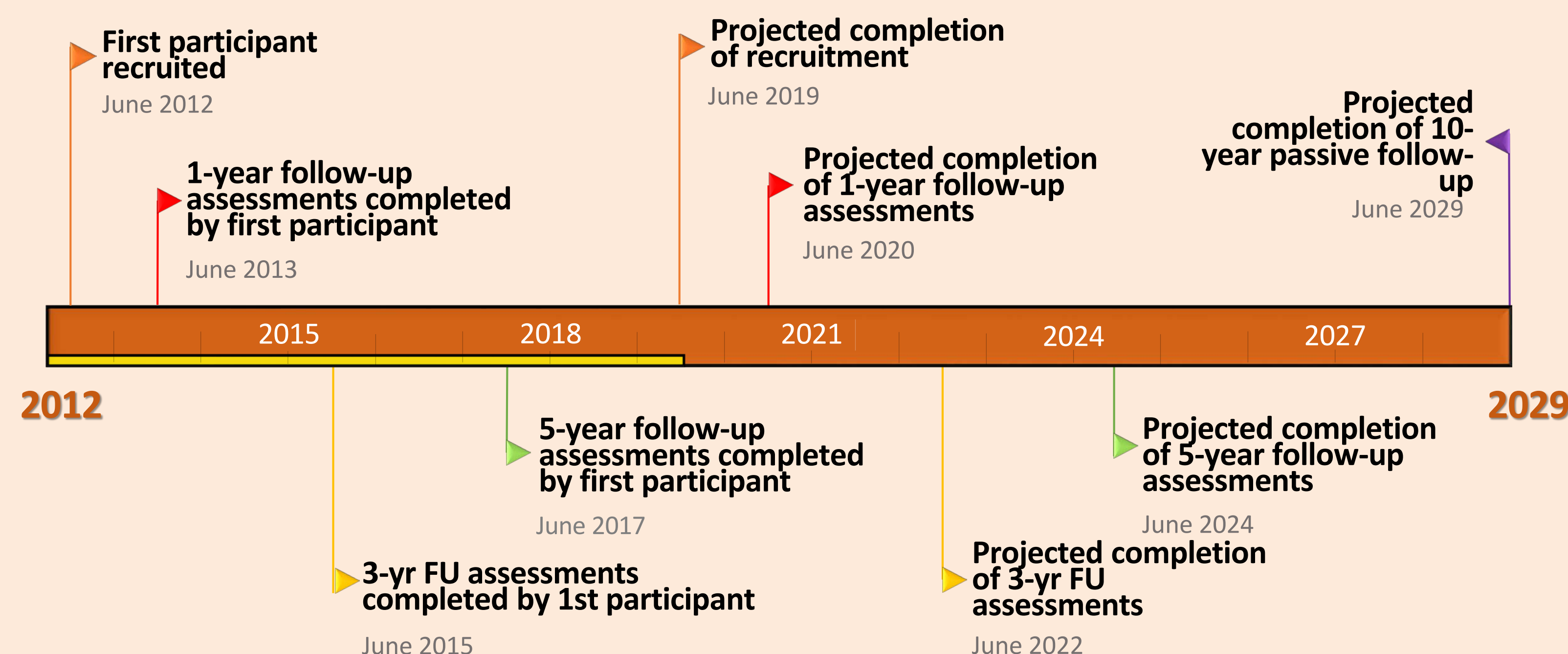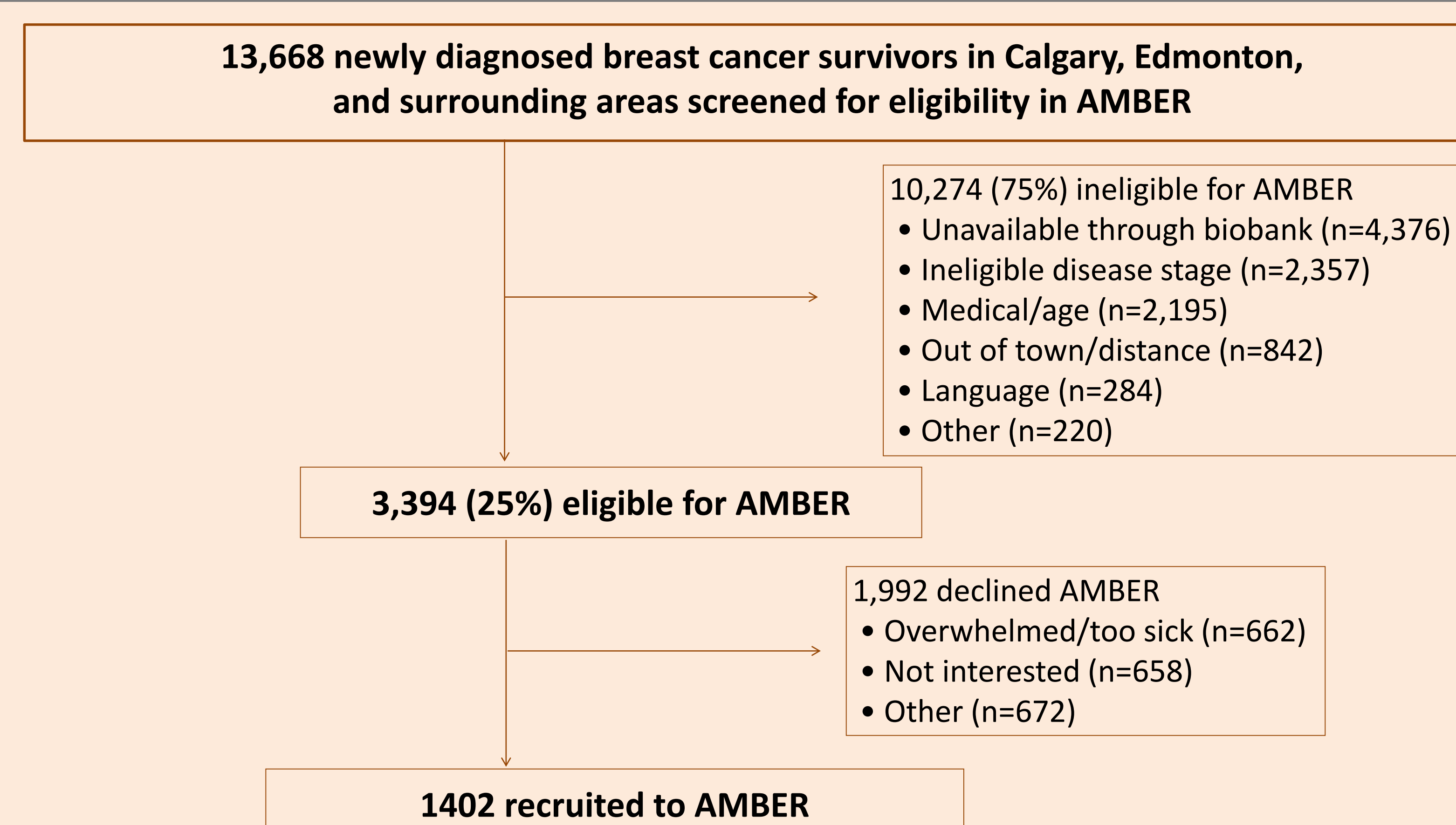| Health-Related Fitness Variables | Total | Calgary | Edmonton |
|---|---|---|---|
| Grip Strength, kg (n=1349) | 54.8 ± 12.1 | 56.3 ± 12.7 | 53.0 ± 10.9 |
| Weak[a] | 46 (3.4%) | 22 (2.9%) | 24 (4.1%) |
| Normal[a] | 958 (71.0%) | 499 (65.7%) | 459 (77.9%) |
| Strong[a] | 345 (25.6%) | 239 (31.5%) | 106 (18.0%) |
| Sit and Reach[b], cm (n=1326) | 27.4 ± 9.9 | 26.6 ± 10.2 | 28.4 ± 9.6 |
| Poor (< - 8.0 cm) | 2 (0.15%) | 2 (0.27%) | - |
| Fair (-7.9 cm – 0.0 cm) | 1 (0.08%) | 1 (0.14%) | - |
| Average (0.1 – 10.0 cm) | 48 (3.62%) | 32 (4.32%) | 16 (2.7%) |
| Good (10.1 – 20.0 cm) | 276 (20.8%) | 169 (22.8%) | 107 (18.3%) |
| Excellent (20.1 – 30.0 cm) | 454 (34.2%) | 251 (33.9%) | 203 (34.6%) |
| Super (>30.1 cm) | 545 (41.1%) | 285 (38.5%) | 260 (44.4%) |
| Cardiorespiratory Fitness (ml/kg/min)[c] (n=1056) | 26.5 ± 6.0 | 26.2 ± 6.1 | 26.9 ± 5.8 |
| Below Average[d] | 595 (56.3%) | 334 (58.6%) | 261 (53.7%) |
| Average[d] | 208 (19.7%) | 113 (19.8%) | 95 (19.6%) |
| Above Average[d] | 253 (24.0%) | 123 (21.6%) | 130 (26.8%) |

Table 2. Health Related Fitness (HRF) data of the first 1402 participants in the AMBER study, Alberta, 2012 – December 31, 2018.

Completion rates for all health-related fitness measures at baseline are ≥ 87%, with the exception of upper body strength measurements (83%) because of functional limitations among some participants. Completion rates for blood collections, lymphedema and questionnaires are 99%, 100% and 94% respectively. Additionally, 1,052, 562 and 193 participants have completed one, three and five year follow-ups, which represent retention rates of 88%, 78% and 75% respectively.

## CONCLUSION

The AMBER Cohort Study is nearing completion of baseline recruitment and will soon be able to investigate many research questions regarding the associations between physical activity, sedentary behaviour, health-related fitness and breast cancer outcomes.