Supplement for *PharmacoEconomics - Open*

Assessment of Health State Utilities Associated with False Positive Cancer Screening Results

Louis S. Matza[1] [louis.matza@evidera.com]; Timothy A. Howell[1] [Timothy.Howell@evidera.com]; Eric T. Fung[2] [efung@grailbio.com]; Sam M. Janes[3] [s.janes@ucl.ac.uk]; Michael Seiden[4] [mvseiden@gmail.com]; Allan Hackshaw[3] [a.hackshaw@ucl.ac.uk]; Lincoln Nadauld[5] [Lincoln.Nadauld@imail.org]; Hayley Karn[6] [Hayley.karn@evidera.com]; Karen C. Chung[2] [kchung@grailbio.com]

[1]Evidera, Bethesda, MD, USA;
[2]GRAIL, LLC., a subsidiary of Illumina Inc.* Menlo Park, CA, USA
[3]University College London, UCL Respiratory, London, UK
[4]Physician in Residence, GRAIL, LLC., Menlo Park, CA, USA
[5]Intermountain Healthcare, Salt Lake City, UT, USA
[6]Evidera, London, UK

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Corresponding author: Louis S. Matza, PhD; Evidera; 7101 Wisconsin Avenue, Suite 1400, Bethesda, MD 20814 USA; +1 301-664-7263 (phone); +1 301-654-9864 (fax); louis.matza@evidera.com

HEALTH STATE A: Cancer screening with negative result

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- You are told that **no sign of cancer was detected**.

HEALTH STATE B1: False positive for lung cancer without head or neck involvement

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have lung cancer**. Therefore, more testing is needed.

CT Scan

- You attend an appointment for a **scan of your chest (called a CT scan)**. This scan will create an **image of your lungs**.
- The full procedure takes about **60 minutes**. The scan itself takes **a few minutes**. During this time, you **lie on your back** in a **large, ring-shaped machine**.
    - In preparation for this scan, you receive an **intravenous (IV) injection of dye** (called contrast), which helps create a **more detailed image of your lungs**.
        - This means that a needle is inserted into a vein in your arm, and fluid flows into your body.
        - During the injection of the dye, you may feel flushed or lightheaded.
    - You may have to **hold your breath** for a **few seconds** during the actual scan.
- This appointment requires you to take a **few hours off work**. This scan takes place about **one week** after receiving your initial screening results.

Resolution

- **Two to seven days** after the CT scan, you are told that **no sign of lung cancer was detected**.
- There were about 10 days from the time you received results from the first screening to the results from the follow-up test. **For these 10 days, it was uncertain whether you might have cancer.**

HEALTH STATE B2: False positive for lung cancer with possible head or neck involvement

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have lung cancer or another type of cancer in your head, neck or chest area**. Therefore, more testing is needed.

CT Scan

- You attend an appointment for a **scan of your chest (called a CT scan)**. This scan will create an **image of your lungs**.
- The full procedure takes about **60 minutes**. The scan itself takes **a few minutes**. During this time, you **lie on your back** in a **large, ring-shaped machine**.
    - In preparation for this scan, you receive an **intravenous (IV) injection of dye** (called contrast) which helps create a **more detailed image of your lungs.**
        - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
        - During the injection of the dye, you may feel flushed or lightheaded.
    - You may have to **hold your breath** for a **few seconds** during the actual scan.
- This appointment requires you to take a **few hours off work.** This scan takes place about **one week** after receiving your initial screening results.
- This scan is **inconclusive**, and **further testing** is recommended.

PET/CT Scan

- About 2 weeks after the CT scan, you attend an appointment for a **scan of your full body (called a PET-CT scan)**. This scan will create a **detailed image of your entire body.**
- You may not eat any sugar for 24 hours before the scan.
- The full procedure takes about **four hours**.
    - Prior to the scan, you receive an **intravenous (IV) injection of radioactive sugar** which helps create a **more detailed image of your lungs.**
        - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
    - Then you wait **60-90 minutes.**
    - When it is time for the scan, you **lie on your back** in a large, ring-shaped machine. This scan takes **30-60 minutes**, and you must **remain as still as possible** during this time.
- This appointment requires you to take at least a half-day **off work.**

Resolution

- **Two to seven days** after the PET-CT scan, you are told that **no sign of lung cancer was detected.**
- There were about 25 days from the time you received results from the first screening to the results from the final follow-up test. **For these 25 days, it was uncertain whether you might have cancer.**

HEALTH STATE B3: False positive for lung cancer with a 6-month follow-up scan

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results** find a spot on your lung, but this is unlikely to be cancer. Spots like this are nearly always harmless.
- To be certain this spot is not cancer, it is recommended that you get **a follow-up scan in six months**.

CT Scan 6 Months Later

- **Six months later**, you get the follow-up scan (called a **CT scan).** You attend an appointment for a **scan of the target area**. This scan will create an image of **your lungs**.
- The scan itself takes **a few minutes**. During this time, you **lie on your back** in a **large, ring-shaped machine**.
- You may have to **hold your breath** for a **few seconds** during the actual scan.
- This appointment requires you to take a **few hours off work**

Resolution

- **Two to seven days** after the CT scan, you are told that **no sign of lung cancer was detected.**
- There were about **6 months** from the time you received results from the first screening to the results from the follow-up test. **For these 6 months, you thought it was unlikely that you had cancer, but you were not completely sure.**

HEALTH STATE C: False positive for colorectal cancer

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have colorectal cancer, which means cancer of the colon or rectum**. Therefore, more testing is needed.

Colonoscopy

- Your doctor recommends a **colonoscopy**. The procedure is scheduled for **two weeks** after your initial screening.
- **The night before** your procedure, you **drink a liquid that causes significant diarrhea for most of the night**, along with other symptoms like cramping and nausea.
- The **day of your procedure**, you **cannot eat or drink anything except water before the procedure.**
- During the colonoscopy procedure, you are given sedation and pain relief delivered through an intravenous (IV) needle.
    - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body to keep you comfortable and help you relax during the procedure.
    - If you would prefer not to receive sedation and pain relief, you can have either "gas and air" or no pain relief.
- During the procedure, **a long, flexible tube is inserted into your colon.** A tiny video camera at the tip of the tube allows the doctor to view the inside of the colon. A biopsy may be performed during the procedure.
- You stay at hospital for about 2 hours to make sure you do not have any lingering reaction to the sedation. You need somebody to **drive you to and from the appointment**.
- This appointment requires you to take a **day off work.**

Resolution

- **Immediately** after the colonoscopy, you are told that **no sign of colorectal cancer was detected.**
- There were about **14 days** from the time you received results from the first screening to the colonoscopy that found no sign of cancer. **For these 14 days, it was uncertain whether you might have cancer.**

HEALTH STATE D1: False positive for breast cancer; no biopsy or MRI

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have breast cancer**. Therefore, more testing is needed.

Mammogram and Ultrasound

- About **one week** after receiving your screening results, you attend a second appointment for **a diagnostic mammogram and a breast ultrasound** to further examine your breast with imaging**.** These may be performed during the same visit.
- During the **mammogram**, your **breast is gradually compressed** between **two horizontal plates** while you hold still**.**
    - The mammogram takes **20-30 minutes** and may cause some discomfort**.** The breast compression only lasts for a few seconds at a time, and then the top plate is lifted so you can change position.
- During the **ultrasound**, the technician will apply a warm, water-based gel to your breast.
- The gel will help the transducer make secure contact with the body. The transducer is a small handheld plastic device that will be placed gently on your skin. The procedure takes **15 minutes**.

Resolution

- **Three to five days** after your scans, you are told that **no sign of breast cancer was detected.**
- There were about 10 days from the time you received results from the first screening to the results from the follow-up mammogram. **For these 10 days, it was uncertain whether you might have cancer.**

HEALTH STATE D2: False positive for breast cancer; biopsy performed

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have breast cancer**. Therefore, more testing is needed.

Mammogram and Ultrasound

- About **one week** after receiving your screening results, you attend a second appointment for **a diagnostic mammogram and a breast ultrasound** to further examine your breast with imaging**.** These may be performed during the same visit.
- During the **mammogram**, your **breast is gradually compressed** between **two horizontal plates** while you hold still**.**
    - The mammogram takes **20-30 minutes** and may cause some discomfort**.** The breast compression only lasts for a few seconds at a time, and then the top plate is lifted so you can change position.
- During the **ultrasound**, the technician will apply a warm, water-based gel to your breast.
- The gel will help the transducer make secure contact with the body. The transducer is a small handheld plastic device that will be placed gently on your skin. The procedure takes **15 minutes**.

Biopsy

- The mammogram and ultrasound reveal a **suspicious finding** in your breast, so your doctor recommends a **biopsy**. This is done at the same appointment after the mammogram and ultrasound.
    - In a **biopsy**, a **small amount of breast tissue is removed and examined** to determine if it is cancerous.
- **You are awake** for this procedure, but a small amount of your **breast is numbed** so that you **cannot feel any pain**.
- A **small cut** (about half a centimeter) is made in your breast, and a **needle is inserted** in the numbed area so that a **small amount of tissue can be removed**.
- A **small bandage** is applied to the area afterwards. No stitches are necessary. After the procedure, you have some soreness in your breast for about 2 days and bruising near the biopsy site.
- This procedure takes **30-60 minutes,** and your doctor recommends against strenuous physical activity for the remainder of the day.

Resolution

- **Three to five days** after your biopsy, you are told that **no sign of breast cancer was detected.**
- There were about 10 days from the time you received results from the first screening to the results from the follow-up mammogram and biopsy. **For these 10 days, it was uncertain whether you might have cancer.**

HEALTH STATE D3: False positive for breast cancer; MRI performed

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have breast cancer**. Therefore, more testing is needed.

Mammogram and Ultrasound

- About **one week** after receiving your screening results, you attend a second appointment for **a diagnostic mammogram and a breast ultrasound** to further examine your breast with imaging**.** These may be performed during the same visit.
- During the **mammogram**, your **breast is gradually compressed** between **two horizontal plates** while you hold still**.**
    - The mammogram takes **20-30 minutes** and may cause some discomfort**.** The breast compression only lasts for a few seconds at a time, and then the top plate is lifted so you can change position.
- During the **ultrasound**, the technician will apply a warm, water-based gel to your breast.
- The gel will help the transducer make secure contact with the body. The transducer is a small handheld plastic device that will be placed gently on your skin. The procedure takes **15 minutes.**

MRI Scan

- **Three to five days** later, you are told that **the results of the mammogram and ultrasound were inconclusive, and you are referred for a breast MRI scan.**
- This scan takes place about **one week** after receiving your mammogram and ultrasound results.
- You attend an appointment for a **more detailed scan of your chest (called an MRI)**. This scan will create a more detailed image of **your breast tissue**.
    - The MRI takes about **30 minutes**, during which time you **lie on your stomach** on a table that slides into a **tube-shaped machine**.
    - In preparation for this scan, you receive an **intravenous** (**IV) injection of dye** (contrast material) which helps create a **more detailed image.**
        - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
        - During the injection of the dye, you may feel flushed or lightheaded.
- While you are lying still in the narrow tube, there are loud noises. This test is **risk-free**, but the tube is relatively **small and enclosed.**

Resolution

- **Three days** after your MRI, you are told that **no sign of breast cancer was detected.**
- There were about 20 days from the time you received results from the first screening to the results from the follow-up MRI. **For these 20 days, it was uncertain whether you might have cancer.**

HEALTH STATE E1: False positive for pancreatic cancer; follow-up CT scan

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have pancreatic cancer**. Therefore, more testing is needed.

CT Scan

- You attend an appointment for a **scan of your abdomen (called a CT scan)**. This scan will create an image of your **pancreas**.
- **One hour before the procedure**, you drink a **bad-tasting liquid.** This will help create a **more detailed image of your pancreas.**
    - This liquid may cause mild cramping and diarrhea.
- The full procedure takes about **60 minutes**. The scan itself takes **a few minutes**. During this time, you **lie on your back** in a **large, ring-shaped machine**.
    - In preparation for this scan, you receive an **intravenous (IV) injection of dye** (called contrast) which helps create a **more detailed image of your pancreas.**
        - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
        - During the injection of the dye, you may feel flushed or lightheaded.
- This appointment requires you to take a **few hours off work.**
- This scan takes place about **one week** after receiving your initial screening results.

Resolution

- **Two days** after the CT scan, you are told that **no sign of pancreatic cancer was detected.**
- There were about 9 days from the time you received results from the first screening to the results from the CT scan. **For these 9 days, it was uncertain whether you might have cancer.**

HEALTH STATE E2: False positive for pancreatic cancer; follow-up CT scan and PET-CT

Cancer Screening

- As part of a routine health check, you are **screened for cancer**.

Screening Result

- The screening **results suggest you may have pancreatic cancer**. Therefore, more testing is needed.

CT Scan

- You attend an appointment for a **scan of your abdomen (called a CT scan)**. This scan will create an image of your **pancreas**.
- **One hour before the procedure**, you drink a **bad-tasting liquid.** This will help create a **more detailed image of your pancreas.**
  - This liquid causes some diarrhea and cramping.
- The full procedure takes about **60 minutes**. The scan itself takes **a few minutes**. During this time, you **lie on your back** in a **large, ring-shaped machine**.
  - In preparation for this scan, you receive an **intravenous (IV) injection of dye** (called contrast) which helps create a **more detailed image of your pancreas.**
    - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
    - During the injection of the dye, you may feel flushed or lightheaded.
- This appointment requires you to take a **few hours off work.**
- This scan takes place about **one week** after receiving your initial screening results.

PET-CT Scan

- As a final precaution, you attend an appointment for a **scan of your full body (called a PET-CT scan)**. This scan will create a **detailed image of your entire body.** This scan occurs about **two weeks** after the CT scan.
- You may not eat any sugar for 24 hours before the scan.
- The full procedure takes about **four hours**.
  - Prior to the scan, you receive an **intravenous (IV) injection of radioactive sugar** which helps create a **more detailed image of your pancreas.**
    - This means that a **needle is inserted** into a vein in your arm, and fluid flows into your body.
  - Then you wait **60-90 minutes.**

- When it is time for the scan, you **lie on your back** in a large, ring-shaped machine. This scan takes **30-60 minutes**, and you must **remain as still as possible** during this time.

- This appointment requires you to take at least a half-day **off work.**

Resolution

- **Two days** after the PET/CT, you are told that **no sign of pancreatic cancer was detected.**
- There were about 23 days from the time you received results from the first screening to the results from the PET-CT scan. **For these 23 days, it was uncertain whether you might have cancer.**

DECLARATIONS

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