Impact of an automated screening management platform on completion of imaged based screening

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Hepatocellular Carcinoma

Over 4 million Americans at risk
FOURTH leading cause of cancer-related deaths
SECOND most lethal cancer: 5 year survival 18%
< 30% receive screening nationally
Wide range of screening compliance:
15-20% among PCPs in our practice to 60% among hepatologist

Despite available screening, more than 60% are diagnosed in late-stage disease

5-year relative survival

<table>
<thead>
<tr>
<th>Cancer Stage at Diagnosis</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Early</td>
<td>31.3%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>10.6%</td>
</tr>
<tr>
<td>Late</td>
<td>2.4%</td>
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60%

Several successful steps must be taken to get a patient successfully screened and there are several barriers along the way.

For PCPs, already burden, identifying the patients at risk from a large cohort and ordering screening is a challenge with only 60% of eligible patients (in our practice) getting appropriate screening order.

There is a further challenge of getting patients to complete their screening with only 50% of patients with orders successfully completing screening.

Our goal was to design a system to help eliminate the burden of identifying eligible patients, makes it easy to order appropriate screening and easier to follow through.

Eligible Patients

Identify
Discuss
Agree
Order
Schedule
Pay
Visit
Follow-up

Patient Barriers
Physician Barriers
System Barriers

IDENTIFY
PRIME
ENGAGE
LiveAware

An automated platform to improve imaging-based screening rates and remove the cognitive burden on ordering clinicians

OUR AIMS:

01 Develop and validate a novel algorithm to automatically identify patients due for imaging-based cancer screening

02 Decrease the cognitive burden on clinicians to order image-based screening

03 Understand and decrease the barriers for patients to complete their screening
LiveAware: HOW IT WORKS

A live dashboard to IDENTIFY patients at risk for HCC using natural language processing and complex queries of the EMR, eliminating the burden on clinicians.

Next, we sought to improve the number of orders placed for screening by identifying upcoming appointments and pending standing screening orders in patient’s medical record only for the clinician to sign.

To further increase the chance for screening completion, we communicated with patients to encourage scan completion.

IDENTIFY

PRIME

ENGAGE
LiveAware, after several iterations, was developed to allow an essentially fully-automated process to identify and track patients.
METHODS: THE PILOT

INTERVENTION GROUP
- Phase 1: August 2019: 1 office, 11 physicians
- Phase 2: November 2019: 7 primary care offices
- 1084 At-Risk Patients

CONTROL GROUP
- January 2019-Current: 1 PCP office
- 35 at-risk patients

OUTCOMES
- Signed orders in control verses intervention group
- Completed orders in the control verses intervention group

At Risk Patients:
- Patients with cirrhosis, chronic Hepatitis B or Hep C
- Compliance:
  - Any liver imaging (Abdominal US, MRI, liver CT) within 7 months (recommended interval + 1 month)
- Baseline:
  - January 2019
Preliminary Results

**Percent Signed Orders**

The COVID Pandemic may have impacted the trends, especially between April and June 2020, when many elective imaging appointments and PCP visits were canceled or rescheduled.

**Percent Completed Orders**

While we see improvements in screening orders placed, the number of completed orders continue to fluctuate.

**The COVID Pandemic may have impacted the trends, especially between April and June 2020, when many elective imaging appointments and PCP visits were canceled or rescheduled.**
**DISCUSSION**

**CONCLUSIONS**
An automated screening dashboard is viable
May be impactful in screening and follow-up management
May help to off cognitive burden on primary care providers

**LIMITATIONS**
- Signed order does not translate to completed screening
- Small size of control practice
- Covid Pandemic

**FUTURE DIRECTIONS**
- Identify physician barriers to signing orders
- Identify and address patient barriers between order and screening completion
- Explore other ways to utilize follow-up platform
- Identify and expand into clinics that might benefit.
THANK YOU

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