



Emergency Physician Notification of CT-detected Hepatic Steatosis

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ABSTRACT

Background: Metabolic dysfunction–associated steatotic liver disease (MASLD) is the most prevalent chronic liver condition globally and a leading cause of liver-related morbidity. Although often asymptomatic, MASLD is frequently identified incidentally on emergency department (ED) imaging. Timely patient notification is critical, as early intervention may alter disease trajectory.

Objective: To determine the proportion of ED patients with CT evidence of hepatic steatosis who recall being informed of the diagnosis by their ED physician.

Methods: We conducted a retrospective cohort study with prospective follow-up at two ED sites within the Maimonides Health system from March to June 2025. Adult patients (18–80 years) with incidental hepatic steatosis noted on CT imaging were identified. Exclusion criteria included hospital admission, non-English language, known liver disease, alcohol use disorder, or psychiatric conditions precluding interview. Structured telephone interviews assessed patient recall of physician notification. The primary outcome was patient-reported awareness of the diagnosis.

Results: Of 171 eligible patients, 150 completed interviews (mean age 47.2 years; 50% female). Only 17 patients (11.3%) recalled being informed of their diagnosis. Notification rates did not differ significantly by sex (13.3% men vs. 9.3% women; $P = .440$).

Conclusions: Fewer than one in eight ED patients with CT evidence of hepatic steatosis recalled being notified of their diagnosis. This communication gap represents a missed opportunity for early MASLD intervention and underscores the need for systematic approaches to ensure patient awareness and follow-up.

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1. Introduction

Metabolic dysfunction–associated steatotic liver disease (MASLD) is the hepatic manifestation of systemic metabolic derangement and has emerged as the most prevalent chronic liver condition worldwide with a global incidence of 30% [1]. MASLD can lead to hepatic fibrosis, cirrhosis and hepatocellular carcinoma and is now a leading cause of liver failure and liver transplantation, reflecting its growing public health impact [2].

MASLD often goes undiagnosed until late in the disease because it is asymptomatic. Many patients are only identified when complications arise or when hepatic steatosis is incidentally discovered on imaging performed for other reasons. The emergency department (ED) represents a potential site of disease diagnosis. MASLD may be diagnosed by computed tomography (CT) and it is often an incidental finding

discovered on imaging done in the ED for unrelated indications. Studies have demonstrated that up to 25% of CT imaging of the abdomen performed in the ED shows fatty liver [3] and that 90% of fatty liver diagnosed by CT scan is attributable to MASLD—the remainder is largely related to alcoholic and viral liver disease [4,5].

Given the potential consequences of the disease, it stands to reason that a patient should be made aware of this diagnosis, yet it is not clear how often this happens. The question is relevant because the risk for complications rises with the progression of the disease, and the early stages of this condition may be treatable with new pharmaceutical agents. GLP-1 agonists and resmetirom can be curative and have changed the treatment landscape for the disease. Failure to notify patients of MASLD delays diagnosis and management.

The literature surrounding notification of ED patients with fatty liver is sparse. Kutaiba et al. searched ED radiology records for diagnoses of hepatic steatosis and found that 19.1% of patients with imaging showing hepatic steatosis had ED discharge paperwork mentioning the diagnosis [6]. Similarly, Kontrick et al. found 14.3% using similar methodology [7]. These studies did not specify whether ED physicians had counseled

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their patients about the diagnosis and the need for follow up, nor do they indicate whether patients recalled the diagnosis after having left the emergency department.

Our study examines ED patients with CT evidence of hepatic steatosis to determine the proportion who recall being informed of the diagnosis by their ED physician. By quantifying the gap in communication, we aim to inform strategies that improve patient notification and follow-up for MASLD detected in acute care settings.

2. Methods

2.1. Study design and setting

We conducted a retrospective cohort study with prospective follow-up at two emergency department sites within the Maimonides Health system – the main campus (Borough Park) and the Bay Ridge urgent care between March 2025 and June 2025. The first site is an academic tertiary care facility with an annual census of 100,000 visits per year, and the other an urban standalone urgent care center with a census of 20,000 visits per year. The sites are served by the same physician group. The study aimed to determine the proportion of patients with incidentally reported hepatic steatosis on ED CT imaging who recalled being informed of this finding by their ED physician.

2.2. Participant identification

Daily lists of CT and CTA imaging studies were generated from the radiology information system for both sites. Eligible studies included CT or CTA of the abdomen, abdomen and pelvis, or chest–abdomen–pelvis, with or without intravenous contrast, performed on patients aged 18–80 years.

Radiology reports were screened for the terms “fatty liver” or “hepatic steatosis” in either the body of the report or the radiologist’s summary. Patients were excluded if they:

- Were admitted to the hospital during the index visit.
- Were documented as non-English speaking.
- Had a history of alcohol use disorder or known liver disease.
- Had significant psychiatric disease that would interfere with a telephone interview.

2.3. Sampling and recruitment

A convenience sample was generated by enrolling eligible patients meeting inclusion criteria during the study period until we reached our approximate target number of study subjects, as per the following sample size calculation: A minimum of 147 patients were needed to have an 80% power to detect a half-width around the prevalence, of patients being informed of their MASLD, of $\pm 5\%$, assuming the background rate is about 10%. Of 171 patients screened, 150 met all criteria and were included in the call list (Fig. 1).

2.4. Data collection

Trained research staff parsed the radiology-generated list taking into account the exclusion criteria to create a daily list. Demographic and clinical data (age, sex, comorbidities) were extracted from the electronic medical record (EMR) to contextualize findings. The principal investigator then conducted structured telephone interviews of the patients on the list using a standardized script to obtain consent and ascertain whether patients recalled being informed of the incidental fatty liver finding by their ED physician. Each patient was called a maximum of three times on separate days before being classified as unreachable. Patients with hepatic steatosis were referred to their primary care doctors or for appropriate follow-up.

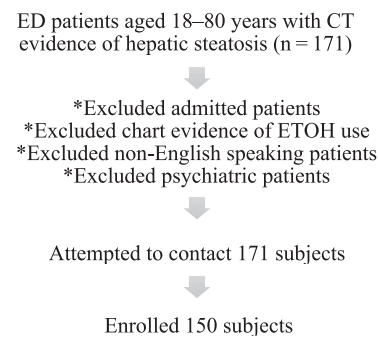


Fig. 1. Subject recruitment flow diagram.

2.5. Outcome measures

The primary outcome was patient-reported awareness of the incidental fatty liver diagnosis.

2.6. Ethical considerations

The study protocol was reviewed and approved by the Maimonides Medical Center Institutional Review Board. Verbal informed consent was obtained from all participants prior to the interview. All data were de-identified prior to analysis. Patients enrolled in the study were referred to their primary care doctors or other appropriate follow-up for the management of their hepatic steatosis.

3. Results

3.1. Study population

Between March 2025 and June 2025, patients aged 18–80 years with CT evidence of hepatic steatosis were identified across the two study sites. After applying exclusion criteria (hospital admission, documented alcohol use disorder, non-English speaking, or imaging not read by a radiologist), patients were contacted by phone until the enrollment target of 150 patients was reached. Ultimately 171 patients were eligible and included in the final sample of whom 150 patients responded by phone.

The cohort comprised 75 men (50.0%) and 75 women (50.0%) by chance. The mean age was 47.17 years (SD:15.03).

Of the final sample of 150 patients, 133/150 patients could not recall being told about their diagnosis and 17/150 patients (11.3%) recalled being advised of their diagnosis by their doctor.

There was no statistically significant difference in the rate of notification between men 10/75 (13.3%) and women 7/75 (9.3%) ($P = .440$).

4. Discussion

In our cohort of 150 emergency department patients with CT evidence of hepatic steatosis, only 11.3% recalled having been notified about their diagnosis by a physician. There was no gender difference. This data is the first to address the outcome measure of patient recall in this context and it correlates with the findings of prior retrospective studies which found that ED incidental hepatic steatosis was mentioned in the discharge paperwork 14% [7] and 19% [6] of the time. The low notification rate is also broadly consistent with the ED incidental findings literature, where patient notification rates have been reported as low as 2%–3% and averaging roughly 15% across studies [8,9]. Based on these data, one can make the argument that fatty liver does not appear to fall within the realm of diagnoses relevant to the emergency physician. Yet there is increasing recognition that fatty liver deserves more attention in the ED [10].

4.1. Hepatic steatosis background

Hepatic steatosis is formally defined as the abnormal accumulation of fat involving at least 5% of hepatocytes on liver biopsy and it becomes reliably detectable by CT when liver fat content reaches about 20–30% by weight on histology, at which point it already corresponds to moderate steatosis [11]. The diagnosis can be subdivided into its etiological constituents: in one series of patients with steatosis, 77.9% had MASLD, 17.5% had metabolic alcoholic liver disease and 4.6% had alcoholic liver disease [12]. In our sample, we excluded patients with obvious alcoholism by chart review and so the presumed proportion of patients with MASLD is likely higher.

4.2. Establishing relevance of the disease to patients

While often asymptomatic, 30% of patients with MASLD have some degree of hepatic fibrosis at diagnosis [13] and in one case series, 13.5% had advanced fibrosis [14]. The risk of eventual progression to cirrhosis is likely 3–5%, though as high as 30% over eight years of follow-up in one retrospective study [15].

Progression is more likely in patients with metabolic syndrome, older age and coexistent cardiovascular disease. Beyond hepatic outcomes, MASLD is strongly associated with increased cardiovascular morbidity and mortality, which remains the leading cause of death in this population [13].

Sample script

Your CT scan shows fatty liver, this is a common condition that usually does not cause symptoms, but it can lead to problems in the future including liver failure. It can be treated, so we urge you to follow up with your doctor and let them know about it.

Early identification of hepatic steatosis on CT scans is an opportunity for risk stratification, metabolic optimization, and disease-modifying intervention. GLP-1 receptor agonists and selective thyroid hormone receptor- β agonists have shown promise in reducing hepatic fat and improving histologic markers of steatohepatitis. Timely recognition and referral can mitigate worsening liver disease and cardiometabolic risk. From a public health standpoint, missed disclosure has nontrivial implications. MASLD affects roughly one-third of U.S. adults and incidental detection of steatosis in the ED—while not the presenting complaint—represents a potential touchpoint to catalyze evaluation and preventive care.

4.3. Possible explanation of results

So why aren't patients being notified that they have fatty liver? This practice pattern likely derives from the structural features of emergency care: encounters are time constrained and problem-focused, there are competing acute priorities, the doctor patient relationship is transitory, all of which complicate both disclosure and downstream follow up care. Patients may already be absorbing critical information about their acute issue, and so non-urgent findings may be deprioritized or forgotten. Alternatively, MASLD and its management are not part of the EM core curriculum and ED physicians may feel uncomfortable bringing up a diagnosis that they will be asked to explain and prognosticate.

4.4. Should reporting of hepatic steatosis be the responsibility of an ED physician?

Whether or not notification and discussion of fatty liver should be included in the scope of practice for emergency physicians is a matter

worthy of debate. This scope must be calibrated to the realities of acute care with the recognition that any additional responsibilities imposed on ED doctors have potential consequences on their other obligations in the zero-sum process of emergency care. While there are no national consensus guidelines from Emergency Medicine societies specifically addressing the diagnosis or management of fatty liver disease in the emergency department setting, the American College of Radiology frames actionable incidental findings as a team responsibility spanning radiology, emergency clinicians, and downstream care, emphasizing structured reports, communication with patients and clinicians, and system-level follow-up and tracking mechanisms rather than reliance on ad hoc individual efforts [16]. These systems require resources and are unlikely to be directly compensated.

Weighing the challenges of notification with the implications of disease, hospitals should implement system wide notification mechanisms for the incidental finding of hepatic steatosis. There is an ethical and medicolegal obligation to inform patients of hepatic steatosis, even if unrelated to the presenting complaint. One way forward is that the diagnosis be included in ED discharge paperwork and physicians incorporate pre-printed instructions when feasible. The predicted spread of artificial intelligence and automation in medicine will hopefully hasten this development. We also encourage ED physicians to mention the diagnosis to their patients when possible. We have provided a brief common-sense script to that end.

4.5. Limitations

The findings represent practice patterns and culture at two urban institutions served by the same faculty. One can speculate that notification rates might vary at other hospitals with different practice cultures and with different patient populations. A multi-center study would be more revealing in this regard.

Patients who were contacted may differ from those who were not reachable, representing a sampling bias. While we made every effort to contact patients as soon as possible after their visit, there is the possibility that they misremembered their communication with their ED doctor introducing recall bias. There is a body of work on information retention after ED discharge which consistently shows that a large proportion of patients either misremember or completely forget their diagnosis and care instructions within days of the visit [17,18]. One might argue that capturing study subjects earlier, even as they leave the ER might yield more accurate results about rates of notification. On the other hand, patient recall as assessed in our study is arguably a more relevant outcome measure than “physician notification” or “inclusion of a diagnosis in the discharge paperwork,” since it relates to the patient's ability to seek treatment for a given condition.

Our study excluded patients who did not speak English. If anything, this fact led to an overestimation of the true rate of physician notification and patient understanding of MASLD diagnoses in the ED. Prior research demonstrates that non-English speaking patients face barriers to receiving and comprehending discharge instructions [19,20,21] suggesting that in a more representative patient pool including non-English speaking individuals, the rate of effective communication and

diagnostic understanding would likely be even lower than observed in our English-speaking cohort.

Finally, patients' ability to register, interpret, and later recall a fatty liver diagnosis likely reflects not only the content of the clinical encounter but also broader social determinants of health. Besides native English language status, factors such as education, health literacy, competing life stressors, and the stability of one's social and economic environment may influence whether a diagnosis is understood.

5. Conclusion

Fewer than one in eight ED patients with CT evidence of hepatic steatosis (11.3%) recalled being notified of their diagnosis. This communication gap represents a missed opportunity for early MASLD intervention and underscores the need for systematic approaches to ensure patient awareness and follow-up.

CRedit authorship contribution statement

Mert Erogul: Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Conceptualization. **Sarah Kabariti:** Writing – review & editing, Resources, Methodology, Investigation, Data curation. **Antonios Likourezos:** Writing – review & editing, Resources, Methodology, Investigation, Data curation. **Suzu Bialek:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Aaron Chen:** Writing – review & editing, Resources, Investigation, Data curation. **Jefferson Drapkin:** Writing – review & editing, Resources, Data curation.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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