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### 1. Modeling cost-effectiveness and health gains of a "universal" versus "prioritized" hepatitis C virus treatment policy in a real-life cohort.

**Authors**
Kondili, Loreta A; Romano, Federica; Rolli, Francesca Romana; Ruggeri, Matteo; Rosato, Stefano; Brunetto, Maurizia Rossana; Zignego, Anna Linda; Ciancio, Alessia; Di Leo, Alfredo; Raimondo, Giovanni; Ferrari, Carlo; Taliani, Gloria; Borgia, Guglielmo; Santantonio, Teresa Antonia; Blanc, Pierluigi; Gaeta, Giovanni Battista; Gasbarrini, Antonio; Chessa, Luchino; Erne, Elke Maria; Villa, Erica; Ieluzzi, Donatella; Russo, Francesco Paolo; Andreone, Pietro; Vinci, Maria; Coppola, Carmine; Chemello, Liliana; Madonia, Salvatore; Verucchi, Gabriella; Persico, Marcello; Zuin, Massimo; Puoti, Massimo; Alberti, Alfredo; Nardone, Gerardo; Massari, Marco; Montalto, Giuseppe; Foti, Giuseppe; Rumi, Maria Grazia; Quaranta, Maria Giovanna; Cicchetti, Americo; Craxi, Antonio; Vella, Stefano; PITER Collaborating Group

**Source**
Hepatology (Baltimore, Md.); Jul 2017

**Publication Date**
Jul 2017

**PubMedID**
28741307

**Abstract**
We evaluated the cost-effectiveness of two alternative direct-acting antiviral (DAA) treatment policies in a real-life cohort of hepatitis C virus-infected patients: policy 1, "universal," treat all patients, regardless of fibrosis stage; policy 2, treat only "prioritized" patients, delay treatment of the remaining patients until reaching stage F3. A liver disease progression Markov model, which used a lifetime horizon and health care system perspective, was applied to the PITER cohort (representative of Italian hepatitis C virus-infected patients in care). Specifically, 8,125 patients naive to DAA treatment, without clinical, sociodemographic, or insurance restrictions, were used to evaluate the policies’ cost-effectiveness. The patients’ age and fibrosis stage, assumed DAA treatment cost of €15,000/patient, and the Italian liver disease costs were used to evaluate quality-adjusted life-years (QALY) and incremental cost-effectiveness ratios (ICER) of policy 1 versus policy 2. To generalize the results, a European scenario analysis was performed, resampling the study population, using the mean European country-specific health states costs and mean treatment cost of €30,000. For the Italian base-case analysis, the cost-effective ICER obtained using policy 1 was €8,775/QALY. ICERs remained cost-effective in 94%-97% of the 10,000 probabilistic simulations. For the European treatment scenario, the ICER obtained using policy 1 was €19,541.75/QALY. ICER was sensitive to variations in DAA costs, in the utility value of patients in fibrosis stages F0-F3 post-sustained virological response, and in the transition probabilities from F0 to F3. The ICERs decrease with decreasing DAA prices, becoming cost-saving for the base price (€15,000) discounts of at least 75% applied in patients with F0 to F3 fibrosis. CONCLUSION Extending hepatitis C virus treatment to patients in any fibrosis stage improves health outcomes and is cost-effective; cost-effectiveness significantly increases when lowering treatment prices in early fibrosis stages. (Hepatology 2017).

### 2. Saving costs through a coordinated care model for patients with hepatocellular cancer.

**Authors**
Ow, Tsai-Wing; Ralton, Lucy; Tse, Edmund

**Source**
Internal medicine journal; Sep 2017; vol. 47 (no. 9); p. 1005-1011

**Publication Date**
Sep 2017

**PubMedID**
28444872

**Abstract**
BACKGROUND In keeping with recent trends, patients with hepatocellular cancer have had their care managed by a dedicated Nurse Coordinator at our tertiary Australian hospital since 2010. To date, there are few data to justify the cost-effectiveness of this approach. AIMSTo quantify the potential cost saved through the employment of a Nurse Coordinator in the management of patients with hepatocellular carcinoma at a single tertiary-level Australian hospital METHODOSA retrospective audit of patients managed by the Nurse Coordinator between 2010 and 2015 was conducted. Consensus reports from previous meetings were reviewed, and nurse-initiated radiological procedures and encounters were identified. Clinical activities were prospectively evaluated over a 1-month period in July-August 2015. The equivalent annual number of outpatient medical encounters spared was calculated. Using the national average cost of each gastroenterology outpatient encounter, a total annual cost was determined and was compared against the cost of funding the position. RESULTSThe activity of the Nurse Coordinator resulted in an equivalent of at least 175 outpatient encounters being spared per year, with a minimum annual cost saving of $85 750. A total of 113 encounters resulted from the independent delivery and initiation of multidisciplinary team meeting plans; 10 were attributed to nurse-led patient education, and 52 were equated to weekly clinical activities. This represented a net annual saving of $17 050. CONCLUSION The incorporation of the Nurse Coordinator in the care pathway of patients with hepatocellular cancer is associated with a reduction in medical outpatient load and, consequently, a significant annual cost saving.
3. Transforming Gastroenterology Care With Telemedicine.

Authors: Siegel, Corey A

Source: Gastroenterology; Apr 2017; vol. 152 (no. 5); p. 958-963

Publication Date: Apr 2017

Publication Type(s): Journal Article Review

PubMedID: 28192101

Database: Medline

Abstract: Health care is changing rapidly, so we must change with the times to develop more efficient, practical, cost-effective, and, importantly, high-quality methods to care for patients. We teach medical students that optimal patient care requires face-to-face interaction to collect information on the patient's history and perform the physical examination. However, management of many patients—especially those with chronic diseases—does not always require physical examination. Telemedicine offers an opportunity to take advantage of technology while leveraging the progressive push toward efficiency and value but also requires the belief that excellent patient care is not always provided in person. Telemedicine can include a variety of aspects of patient care adapted to be performed remotely, such as telemonitoring, tele-education, teleconsultation, and telecare. All of these have been evaluated in gastroenterology practice and have demonstrated feasibility and patient preference but have produced mixed results regarding patient outcomes. By combining telemedicine tools and new care models, we can redesign chronic disease management to include fewer in-person visits when patients are well yet increase access for patients who need to be seen. This change could lead to higher-value care by improving the experience of care, decreasing costs, and improving the health of the population. Barriers include reimbursement, licensing, and fear of litigation. However, if we hope to meet the needs of patients within our changing health care system, telemedicine should be incorporated into our strategy.

4. Gastroenterologist and nurse management of symptoms after pelvic radiotherapy for cancer: an economic evaluation of a clinical randomized controlled trial (the ORBIT study).

Authors: Jordan, Jake; Gage, Heather; Benton, Barbara; Lalji, Amyn; Norton, Christine; Andreyev, H Jervoise N

Source: ClinicoEconomics and outcomes research : CEOR; 2017; vol. 9; p. 241-249

Publication Date: 2017

Publication Type(s): Journal Article

PubMedID: 28496343

Database: Available at ClinicoEconomics and Outcomes Research from Europe PubMed Central - Open Access

Abstract: BACKGROUND: Over 20 distressing gastrointestinal symptoms affect many patients after pelvic radiotherapy, but in the United Kingdom few are referred for assessment. Algorithmic-based treatment delivered by either a consultant gastroenterologist or a clinical nurse specialist has been shown in a randomized trial to be statistically and clinically more effective than provision of a self-help booklet. In this study, we assessed cost-effectiveness.

METHODS: Outcomes were measured at baseline (pre-randomization) and 6 months. Change in quality-adjusted life years (QALYs) was the primary outcome for the economic evaluation; a secondary analysis used change in the bowel subset score of the modified Inflammatory Bowel Disease Questionnaire (IBDQ-B). Intervention costs, British pounds 2013, covered visits with the gastroenterologist or nurse, investigations, medications and treatments. Incremental outcomes and incremental costs were estimated simultaneously using multivariate linear regression. Uncertainty was handled non-parametrically using bootstrap with replacement.

RESULTS: The mean (SD) cost of treatment was £895 (499) for the nurse and £1101 (567) for the consultant. The nurse was dominated by usual care, which was cheaper and achieved better outcomes. The mean cost per QALY gained from the consultant, compared to usual care, was £250,455; comparing the consultant to the nurse, it was £25,875. Algorithmic care produced better outcomes compared to the booklet only, as reflected in the IBDQ-B results, at a cost of ~£1,000.

CONCLUSION: Algorithmic treatment of radiation bowel injury by a consultant or a nurse results in significant symptom relief for patients but was not found to be cost-effective according to the National Institute for Health and Care Excellence (NICE) criteria.

5. HEPACONTROL. A program that reduces early readmissions, mortality at 60 days, and healthcare costs in decompensated cirrhosis.

Authors: Morales, Betty P; Planas, Ramon; Bartoli, Ramon; Morillas, Rosa M; Sala, Margarita; Casas, Irma; Armengol, Carolina; Masnou, Helena

Source: Digestive and liver disease : official journal of the Italian Society of Gastroenterology and the Italian Association for the Study of the Liver; Aug 2017

Publication Date: Aug 2017

Publication Type(s): Journal Article

PubMedID: 28870446

Database: Medline
Abstract

BACKGROUND & AIMS: Decompensated cirrhosis patients have an elevated incidence of early readmission, mortality and economic burden. The aims of HEPACONTROL were to reduce early readmission and to evaluate its impact on mortality and emergency department visits. PATIENTS AND METHODS: Quasi-experimental study with control group which compared two cohorts of patients discharged after being admitted for cirrhosis-related complications. A prospective cohort (n=80), who followed the HEPACONTROL program, which began with a follow-up examination seven days after discharge at the Hepatology Unit Day Hospital and a retrospective cohort of patients (n=112), who had been given a standard follow-up. Outcome variables that were compared between both groups were early readmission rates, the number of emergency department visits post-discharge, financial costs and mortality. RESULTS: The rate of early readmission was lower in the group with HEPACONTROL (11.3% vs 29.5%; P=.003). Also, the mean number of visits to the emergency department post-discharge (1.10±1.64 vs 1.71±2.36; P=.035), mortality at 60 days (3.8% vs 14.3%; P=.016), and the cost of early readmission were all lower compared with the group with standard follow-up (P=.029). CONCLUSIONS: HEPACONTROL decreases the incidence of early readmission the rate of emergency department visits and mortality at 60 days in patients with decompensated cirrhosis, and it is cost-effective.

6. Scheduling non-operating room anesthesia cases in endoscopy: Using the sandbox analogy.

Authors
Tsai, Mitchell H; Cipri, Leah A; O'Donnell, Stephen E; Matthew Fisher, J; Andritsos, Dimitrios A

Source
Journal of clinical anesthesia; Aug 2017; vol. 40; p. 1-6

Publication Date
Aug 2017

Publication Type(s)
Journal Article

PubMedID
28625424

Database
Medline

Abstract
STUDY OBJECTIVE: For many hospitals, the non-operating room anesthesia (NORA) workload continues to expand. We developed a new NORA scheduling process with shared block time - a sandbox - amongst all of the gastroenterology groups and measured the efficacy of the intervention using basic operating room management metrics. DESIGN: Prospective analysis, statistical process control. SETTING: Academic, rural hospital; endoscopy suite; postoperative recovery area. PATIENTS: Adults and pediatric patients undergoing elective and/or urgent endoscopic procedures. INTERVENTIONS: In 2014, we divided the NORA block allocations on Thursdays into one afternoon block for pediatric GI, and 1.5 blocks to be shared between the two adult GI groups. We made a provision for an additional afternoon block available if necessary. No changes were made in the release policy. For scheduling, shared block time was released between the three endoscopy groups at 7 days and then opened to the general pool at 48 hours. MEASUREMENTS: Case volumes, under-utilized time (opportunity-unused), elective time-in-block, over-utilized time. MAIN RESULTS: With the addition of a pediatric gastroenterologist, the number of cases per month increased after the change in scheduling procedure from a mean of 107 cases per month to 131, an increase of 23% (p<0.01) (see Chart 1). Elective time-in-block increased after the intervention by 13% (p=0.09), while under-utilized time (opportunity-unused time) decreased in a reciprocal fashion (15%, p=0.03). Pre-intervention mean over-utilized time was 101 min/month, while post-intervention over-utilized time decreased by 84.5% (99% CI 3.29) to a mean of 16 min/month. CONCLUSIONS: By using a multi-disciplinary, team-based approach, we were able to increase throughput without increasing under-utilized or over-utilized time, thereby increasing efficiency. Despite the additional cases brought in by the pediatric gastroenterologist, opportunity-unused time decreased only moderately-lending support to our prediction that opening an additional NORA block was not only unnecessary to accommodate expansion of the gastroenterology service, but was also financially unviable. As anesthesiologists continue to expand their practice into the NORA environment, good communication, interdepartmental collaboration, and flexible scheduling processes are essential to improving efficiency.


Authors
Konerman, Monica A; Thomson, Mary; Gray, Kristen; Moore, Meghan; Choxi, Hetal; Seif, Elizabeth; Lok, Anna SF

Source
Hepatology (Baltimore, Md.); Jul 2017

Publication Date
Jul 2017

Publication Type(s)
Journal Article

PubMedID
28714196

Database
Medline
Despite effective treatment for chronic hepatitis C, deficiencies in diagnosis and access to care preclude disease elimination. Screening of baby boomers remains low. The aims of this study were to assess the impact of an electronic health record-based prompt on hepatitis C virus (HCV) screening rates in baby boomers in primary care and access to specialty care and treatment among those newly diagnosed. We implemented an electronic health record-based “best practice advisory” (BPA) that prompted primary care providers to perform HCV screening for patients seen in primary care clinic (1) born between 1945 and 1965, (2) who lacked a prior diagnosis of HCV infection, and (3) who lacked prior documented anti-HCV testing. The BPA had associated educational materials, order set, and streamlined access to specialty care for newly diagnosed patients. Pre-BPA and post-BPA screening rates were compared, and care of newly diagnosed patients was analyzed. In the 3 years prior to BPA implementation, 52,660 baby boomers were seen in primary care clinics and 28% were screened. HCV screening increased from 7.6% for patients with a primary care provider visit in the 6 months prior to BPA to 72% over the 1 year post-BPA. Of 53 newly diagnosed patients, all were referred for specialty care, 11 had advanced fibrosis or cirrhosis, 20 started treatment, and 9 achieved sustained virologic response thus far.

CONCLUSION Implementation of an electronic health record-based prompt increased HCV screening rates among baby boomers in primary care by 5-fold due to efficiency in determining needs for HCV screening and workflow design. Streamlined access to specialty care enabled patients with previously undiagnosed advanced disease to be cured. This intervention can be easily integrated into electronic health record systems to increase HCV diagnosis and linkage to care. (Hepatology 2017).

Autophagy determines efficiency of liver-directed gene therapy with adeno-associated viral vectors.

Hösel, Marianna; Huber, Anke; Bohlen, Susanne; Lucifora, Julie; Ronzitti, Giuseppe; Puzzo, Francesco; Boisgerault, Florence; Hacker, Ulrich T; Kwanten, Wilhelmus J; Klötting, Nora; Blüher, Matthias; Gluschko, Alexander; Schramm, Michael; Utermühlen, Olaf; Bloch, Wilhelm; Mingozi, Federico; Krut, Oleg; Büning, Hildegard

Source Hepatology (Baltimore, Md.); Jul 2017; vol. 66 (no. 1); p. 252-265

Use of adeno-associated viral (AAV) vectors for liver-directed gene therapy has shown considerable success, particularly in patients with severe hemophilia B. However, the high vector doses required to reach therapeutic levels of transgene expression caused liver inflammation in some patients that selectively destroyed transduced hepatocytes. We hypothesized that such detrimental immune responses can be avoided by enhancing the efficacy of AAV vectors in hepatocytes. Because autophagy is a key liver response to environmental stresses, we characterized the impact of hepatic autophagy on AAV infection. We found that AAV induced mammalian target of rapamycin (mTOR)-dependent autophagy in human hepatocytes. This cell response was critically required for efficient transduction because under conditions of impaired autophagy (pharmacological inhibition, small interfering RNA knockdown of autophagic proteins, or suppression by food intake), recombinant AAV-mediated transgene expression was markedly reduced, both in vitro and in vivo. Taking advantage of this dependence, we employed pharmacological inducers of autophagy to increase the level of autophagy. This resulted in greatly improved transduction efficiency of AAV vectors in human and mouse hepatocytes independent of the transgene, driving promoter, or AAV serotype and was subsequently confirmed in vivo. Specifically, short-term treatment with a single dose of torin 1 significantly increased vector-mediated hepatic expression of erythropoietin in C57BL/6 mice. Similarly, coadministration of rapamycin with AAV vectors resulted in markedly enhanced expression of human acid-α-glucosidase in nonhuman primates.

CONCLUSION We identified autophagy as a pivotal cell response determining the efficiency of AAVs intracellular processing in hepatocytes and thus the outcome of liver-directed gene therapy using AAV vectors and showed in a proof-of-principle study how this virus-host interaction can be employed to enhance efficacy of this vector system. (Hepatology 2017;66:252-265).

Primary Care Collaboration to Improve Diagnosis and Screening for Colorectal Cancer.

Schiff, Gordon D; Bearden, Trudy; Hunt, Lindsay Swain; Azzara, Jennifer; Larmon, Jay; Phillips, Russell S; Singer, Sara; Bennett, Brandon; Sugarman, Jonathan R; Bitton, Asaf; Ellner, Andrew

Source Joint Commission journal on quality and patient safety; Jul 2017; vol. 43 (no. 7); p. 338-350
Abstract

Colorectal cancer (CRC) is a leading cause of cancer death, reducible by screening and early diagnosis, yet many patients fail to receive recommended screening. As part of an academic improvement collaborative, 25 primary care practices worked to improve CRC screening and diagnosis. METHODS: The project featured triannual learning sessions, monthly conference calls, practice coach support, and monthly reporting. The project phases included literature review and interviews with national leaders/organizations, development of driver diagrams to identify key factors and change ideas, project launch and practice team planning, and a practice improvement phase. RESULTS: The project activities included (1) inventory of barriers and best practices, (2) driver diagram to drive improvements, (3) list of changes to try, (4) compilation of lessons learned, and (5) five key changes to optimize screening and follow-up. Practices leveraged prior transformation efforts to track patients for screening and follow-up during and between office visits. By mapping processes, testing changes, and collecting data, sites targeted opportunities to improve quality, safety, efficiency, and patient and care team experience. Successful change interventions centered around partnering with gastroenterology, engaging leadership, leveraging registries and health information technology, promoting alternative screening options, and partnering with and supporting patients. Several practices achieved improvement in screening rates, while others demonstrated no change from baseline during the 10-month testing and implementation phase (July 2014-April 2015). CONCLUSION: The collaborative effectively engaged teams in a broad set of process improvements with key lessons learned related to barriers, information technology challenges, outreach challenges/strategies, and importance of stakeholder and patient engagement.


Authors
Mayl, Jonathan; Marchenko, Mikhail; Frierson, Emily

Source
Cureus; May 2017; vol. 9 (no. 5); p. e1250

Publication Date
May 2017

Publication Type(s)
Journal Article Review

PubMedID
28630808

Abstract

Diverticulitis is a common ailment that is prevalent in the developed world. As such, the management of diverticulitis places a substantial economic burden on healthcare. Research is ongoing to further elucidate both the pathogenesis of the disease, as well as ways to reduce associated expenditures. One of these emerging areas of research calls into question the use of antibiotics during treatment of acute uncomplicated diverticulitis. Current guidelines are largely based on expert opinion, with little evidence supporting the standard practice of antibiotic therapy. In this literature review, we have compiled and analyzed the latest collection of evidence in managing acute uncomplicated diverticulitis. There have been two randomized controlled trials (RCTs) performed that assessed the possibility of treating acute uncomplicated diverticulitis without antibiotics. Both the Antibiotika Vid Okomplicerad Divertikulit (AVOD) study and Daniels, et al. have found that an observational approach to acute uncomplicated diverticulitis is not inferior to antibiotic treatment and does not result in increased complication or recurrence rates. We also reviewed a single-center cohort study, a prospective observational study, and two retrospective case-controlled studies comparing observational management versus antibiotic treatment in patients with acute uncomplicated diverticulitis. We found the results were comparable; there was no difference in complication rates or recurrence in any study. The consensus among the studies reviewed challenges the current practice guidelines issued by the American Gastroenterological Association. However, given the geographical difference in diverticular disease and inherent bias found in these studies, we cannot recommend a modification of the guidelines. Based on this literature review, we feel compelled to suggest, and strongly recommend, further research be conducted in the United States in order to bolster the already significant evidence against antibiotic therapy in acute uncomplicated diverticulitis.

11. Pharmacist-initiated hepatitis C virus screening in a community pharmacy to increase awareness and link to care at the medical center.

Authors
Isho, Nadine Y; Kachlic, Marlowe Djuric; Marcelo, Jennifer Chan; Martin, Michelle T

Source
Journal of the American Pharmacists Association : JAPhA; 2017; vol. 57 (no. 3S); p. S259

Publication Date
2017

Publication Type(s)
Journal Article

PubMedID
28506379

Abstract

Hepatitis C virus (HCV) screening in the general population is important due to high prevalence, prolonged asymptomatic period, and increased risk of severe complications. Despite such importance, patient awareness and uptake of HCV screening is suboptimal. Community pharmacies are well-positioned to act as a bridge between patients and the healthcare system, and can use their unique role to increase community awareness and improve HCV care. This project aimed to identify the extent of HCV screening activity in community pharmacies, and assess the potential role of pharmacists in improving HCV screening rates. A mixed-methods approach was used to study pharmacy HCV screening activity and to develop pharmacist training materials. The majority of pharmacies surveyed were small to medium in size, with low HCV screening activity. Barriers to HCV screening in community pharmacists included an unclear role, lack of time, and lack of patient motivation. Pharmacist training materials were developed and found to be well-received by pharmacists. In light of the findings, the project resulted in the development of a pharmacist-led hepatitis C virus screening program at the medical center, demonstrating the potential for community pharmacies to improve HCV screening rates and patient outcomes.
Abstract

OBJECTIVE To describe the design and implementation of a pharmacist-led hepatitis C virus (HCV) screening and education program in a community pharmacy with a protocol for linkage to care at the affiliated hepatology clinic for patients born between 1945 and 1965. SETTING Outpatient pharmacy affiliated with the University of Illinois Hospital and Health Sciences System. PRACTICE DESCRIPTION The community pharmacist resident conducted the HCV screening at the health system-based community pharmacy. PRACTICE INNOVATION Community pharmacists provided patients with HCV screening and education while patients waited for their prescriptions to be ready or upon appointment. Patients were given a questionnaire before and after HCV education to assess the impact of pharmacist-provided education on patient knowledge. A protocol was developed to link patients with a positive HCV antibody test result to care with a hepatologist for confirmatory testing at a follow-up appointment at the medical center. EVALUATION Investigators assessed the feasibility of providing the screening and education, recorded the number of patients screened, and recorded the differences in the questionnaire responses before and after education. RESULTS Pharmacist-led HCV screening services were implemented successfully at the community pharmacy. All patients had a negative antibody result; therefore, linkage to care at the medical center, although available, was not necessary. The self-reported posttest HCV knowledge scores were significantly higher than pretest scores. CONCLUSION This article outlines the methodology for providing a multidisciplinary HCV screening, education, and referral program in a community pharmacy affiliated with a medical center. Pharmacist-initiated HCV screening in a community pharmacy can assist with identifying patients at risk for HCV infection and provide patients with linkage to care in the health system. This report may encourage community pharmacists to conduct future prospective trials to evaluate clinical and economic outcomes of community-based HCV screenings.

12. Intelligent diagnosis of jaundice with dynamic uncertain causality graph model.

Authors Hao, Shao-Rui; Geng, Shi-Chao; Fan, Lin-Xiao; Chen, Jia-Jia; Zhang, Qin; Li, Lan-Juan
Source Journal of Zhejiang University. Science. B; May 2017; vol. 18 (no. 5); p. 393-401
Publication Date May 2017
Publication Type(s) Journal Article
PubMedID 28471111
Database Medline

Abstract

Jaundice is a common and complex clinical symptom potentially occurring in hepatology, general surgery, pediatrics, infectious diseases, gynecology, and obstetrics, and it is fairly difficult to distinguish the cause of jaundice in clinical practice, especially for general practitioners in less developed regions. With collaboration between physicians and artificial intelligence engineers, a comprehensive knowledge base relevant to jaundice was created based on demographic information, symptoms, physical signs, laboratory tests, imaging diagnosis, medical histories, and risk factors. Then a diagnostic modeling and reasoning system using the dynamic uncertain causality graph was proposed. A modularized modeling scheme was presented to reduce the complexity of model construction, providing multiple perspectives and arbitrary granularity for disease causality representations. A "chaining" inference algorithm and weighted logic operation mechanism were employed to guarantee the exactness and efficiency of diagnostic reasoning under situations of incomplete and uncertain information. Moreover, the causal interactions among diseases and symptoms intuitively demonstrated the reasoning process in a graphical manner. Verification was performed using 203 randomly pooled clinical cases, and the accuracy was 99.01% and 84.73%, respectively, with or without laboratory tests in the model. The solutions were more explicable and convincing than common methods such as Bayesian Networks, further increasing the objectivity of clinical decision-making. The promising results indicated that our model could be potentially used in intelligent diagnosis and help decrease public health expenditure.


Authors Cadier, Benjamin; Bulsei, Julie; Nahon, Pierre; Seror, Olivier; Laurent, Alexis; Rosa, Isabelle; Layese, Richard; Costentin, Charlotte; Cagnot, Carole; Durand-Zaleski, Isabelle; Chevreul, Karine; ANRS CO12 CirVir and CHANGH groups
Source Hepatology (Baltimore, Md.); Apr 2017; vol. 65 (no. 4); p. 1237-1248
Publication Date Apr 2017
Publication Type(s) Comparative Study Journal Article
PubMedID 28176349
Database Medline
Abstract  Hepatocellular carcinoma (HCC) is the leading cause of death in patients with cirrhosis. Patients outside clinical trials seldom benefit from evidence-based monitoring. The objective of this study was to estimate the cost-effectiveness of complying with HCC screening guidelines. The economic evaluation compared surveillance of patients with cirrhosis as recommended by the guidelines ("gold-standard monitoring") to "real-life monitoring" from the health care system perspective. A Markov model described the history of the disease and treatment course including current first-line curative treatment: liver resection, radiofrequency ablation (RFA), and liver transplantation. Transition probabilities were derived mainly from two French cohorts, CIRVIR and CHANGH. Costs were computed using French and U.S. tariffs. Effectiveness was measured in life years gained (LYG). An incremental cost-effectiveness ratio (ICER) was calculated for a 10-year horizon and tested with one-way and probabilistic sensitivity analyses. The cost difference between the two groups was $648 ($87,476 in the gold-standard monitoring group vs. $86,829 in the real-life monitoring group) in France and $11,965 ($93,795 vs. $81,829) in the United States. Survival increased by 0.37 years (7.18 vs. 6.81 years). The ICER was $1,754 per LYG in France and $32,415 per LYG in the United States. The health gain resulted from earlier diagnosis and access to first-line curative treatments, among which RFA provided the best value for money.

CONCLUSION  Our results indicate that gold-standard monitoring for patients with cirrhosis is cost-effective, attributed to a higher probability of benefiting from a curative treatment and so a higher survival probability. (Hepatology 2017;65:1237-1248).
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