HowsYourHealth.org/Supplement

for

Standardized Patient Input and AI

Real-World Data That Drives Improvement

Overview: "Trust, But Verify" or "Verify, Then Trust"?

"Trust, then verify" is a Russian proverb often repeated by President Ronald Reagan. In science and health care, however, the reverse — "verify, then trust"— is usually the wiser approach when evaluating new information.

This reversal is especially important in the context of Artificial Intelligence (AI). As AI becomes increasingly embedded in clinical workflows, the need for verification before trust becomes more critical.

Back in 1985 (1) and again in 1996 (2), my colleagues and I proposed methodological standards to guide health care professionals in evaluating computer-generated health information. Now, with AI, the challenges of verification—and the risks of misplaced trust—have only grown.

This Opinion claims that while trust in AI has room to grow, analysis of patient-reported data is verifiable and trustworthy. In fact, when data comes directly from patients, it should be considered more trustworthy than the often indirect and filtered data used to support "value-based payment" models, which rely on administrative codes and electronic health records.

- With access to raw patient data, we can use straightforward validation methods—such as split-sample reliability checks—to assess AI outputs. For instance, when evaluating reports of patient harm, our initial results demonstrated encouraging reliability.

Example: A Split- Random Sample Reliability Test of Basic AI Categorization

Category	Latest (305 reports)	Previous (313 reports)
Nonsense	~10% of cases (approx.)	~12% of cases (approx.)
Errors	~65% of cases (approx.)	~63% of cases (approx.)
Harms	~25% of cases (approx.)	~25% of cases (approx.)

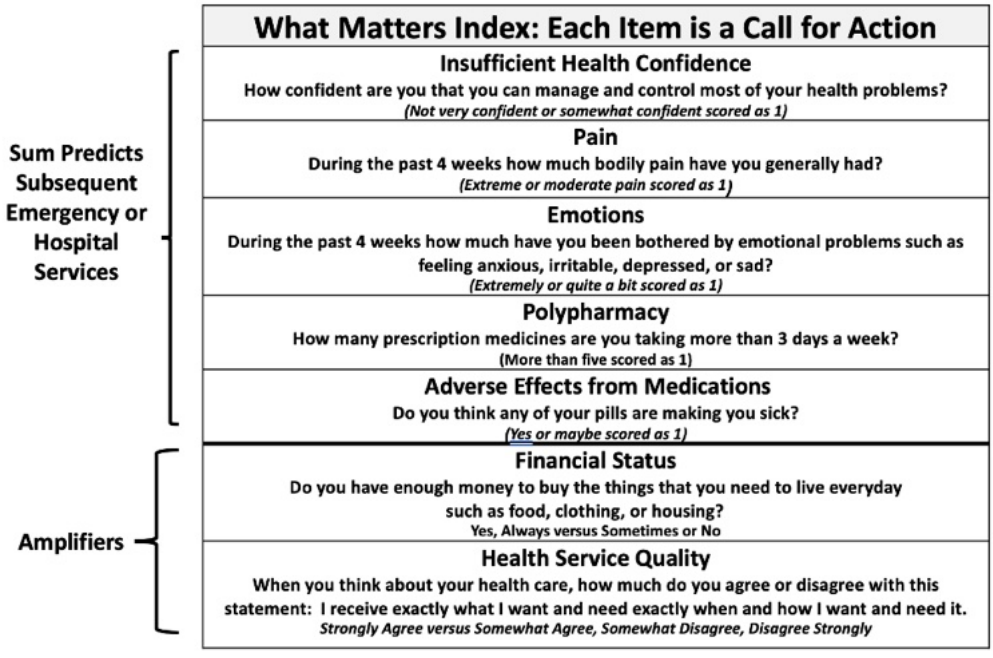
- We can also spot check the verbatims as shown in several of the following examples included in this Supplement.

1. Wasson JH, Sox HC, Goldman L, Neff RK. Clinical Prediction Rules: Applications and methodological standards. N Engl J Med 1985;313(13):793-799.

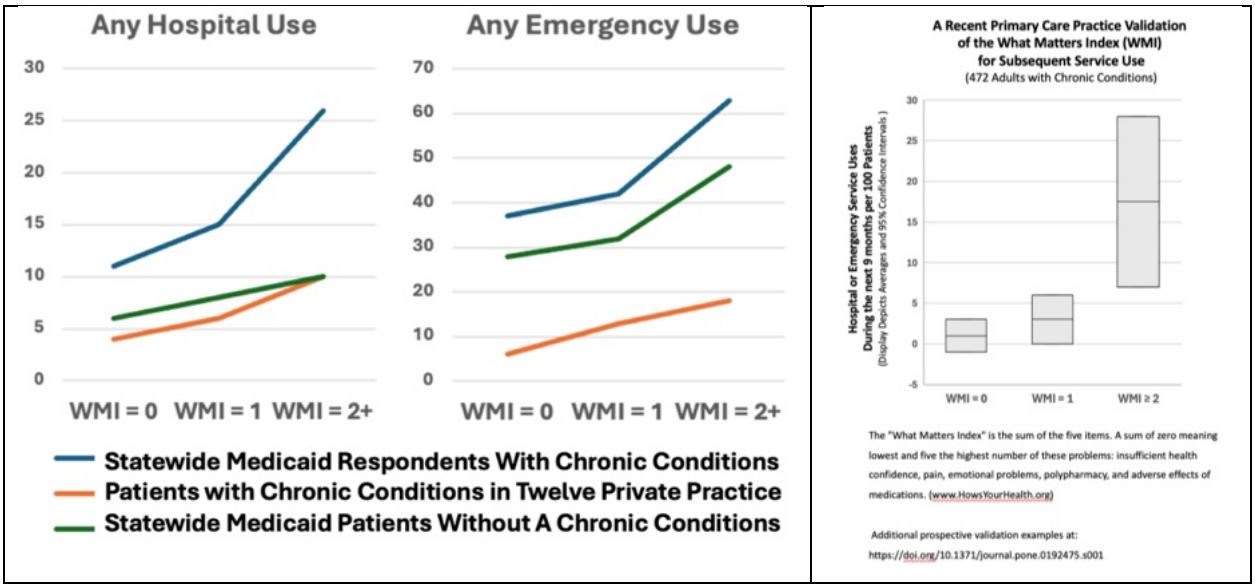
2. Wasson JH, Sox HC, Clinical Prediction Rules Have They Come of Age? JAMA 1996; 275(8); 641-642.

Serving Needs that Matter, Predicting Risks, Comparing Patient Groupings

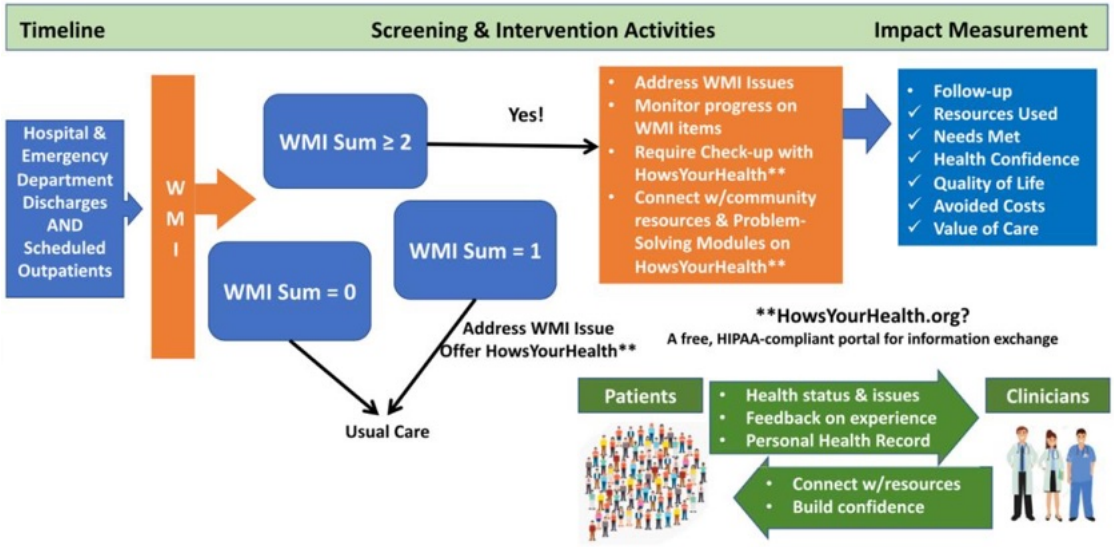
Clinicians and researchers face a wide array of patient-reported methods and measures, making it difficult to compare outcomes across settings. As a result, similar interventions and observations may yield different interpretations due to the lack of standardized patient data.



To address this, the brief What Matters Index (WMI) within the HYH SAINT is used because it is a standardized, patient-reported tool for risk stratification. The WMI consists of five simple, actionable, and easily interpretable measures. Each positive response adds one point, creating a total WMI score ranging from 0 to 5. This score predicts a patient's risk of future hospital or emergency care and correlates with self-reported quality of life—regardless of diagnosis. A score of 2 or more is associated with a significantly increased risk. (3) The diagrams illustrate this trend for many different adult populations.



In short, the WMI can and should be used to support both individual patient care and population-level triage, as illustrated in the accompanying algorithm. (4)

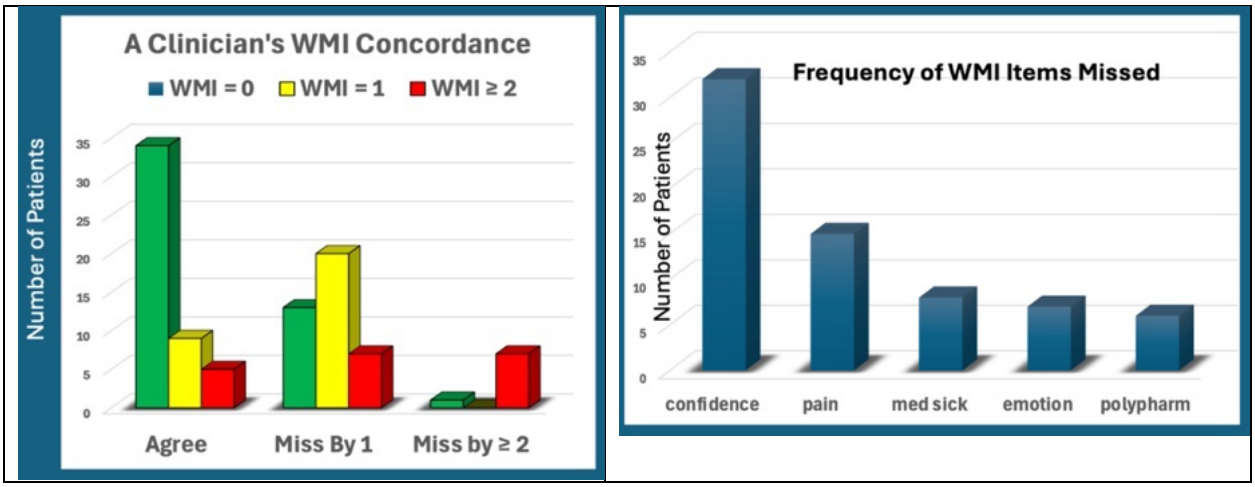


3. Wasson JH, Ho L, Soloway L, Moore LG (2018) Validation of the What Matters Index: A brief, patient-reported index that guides care for chronic conditions and can substitute for computer-generated risk models. PLoS ONE 13(2): e0192475.

4. Wasson JH. (2020) Standardized Assessment, Information, and Networking Technologies (SAINTs) Lessons from Three Decades of Development and Testing" Quality of Life Research 2020. (DOI: 10.1007/s11136-020-02528-z)

A Primary Care Clinician Tests Her Identification of What Matters

According to numerous ratings on the HYH SAINT Lynn Ho, MD, is a top-performing physician. But still she wondered how accurate her blinded rating of what matters to her patients of many years would compare to what her patients reported on the What Matter Index.



The results indicate that even for the best clinicians, its better to rely on patient report.

More About Errors and Harms

Patients are asked by the HYH SAINT:

"Describe here any medical errors (mistakes) that you or your family have experienced. Errors include things like mixed up medications or poor treatment that resulted in harm or additional problems. If possible, tell us the cause of the error and how it might have been avoided. Your response will help us improve future care delivery."

- *Eligibility:* To be included in this analysis, the respondent had to indicate that the event they described caused harm or injury, occurred within the last year, and happened to them personally (not just to a family member).

The Category Assignments and Harm Levels by Artificial Intelligence

- *Assigned Categories: All responses were assigned to one (primary) category among the nine defined. The categories are: Diagnostic Issues, Procedural or Surgical Issues, Medication Related Issues, Communication or Information Failures, Health Care System or Organization Failure, Laboratory or Test Problems, Provider Attitude/Behavior Issues, Patient-Related Issues, and General/Miscellaneous Issues. If a response involved multiple problems, it was categorized by the most prominent issue (ensuring it stays consistent with earlier classifications). For example, a response describing a misdiagnosis and a rude physician was classified under Diagnostic Issues if the diagnostic error was central, while a response about lack of information before a procedure was classified under Communication Failures even if it occurred in a surgical context.*
- *Harm Reported vs. Actual Injury: We marked "Harm Reported" as Yes if the patient explicitly mentioned any negative consequence or suffering (for instance, pain, an infection, emotional distress, or a complication). "Actual Injury/Impact" is Yes only if the response indicated a serious or lasting harm – such as permanent injury, prolonged or severe pain, significant health deterioration, or severe psychological trauma. In many cases, patients reported some level of harm (e.g. temporary pain or inconvenience) without a long-term injury; those would be Yes for Harm Reported but No for Actual Injury/Impact. We ensured these judgments follow the examples given: for instance, a response stating "ended up with pneumonia and was re-admitted to the hospital" is marked as Harm Reported = Yes (since a complication occurred) and Actual Injury/Impact = Yes (since it is a serious health outcome). In contrast, a response saying "the doctor was rude and it upset me" would be Harm Reported = Yes (emotional distress mentioned) but Actual Injury/Impact = No (no severe or lasting injury described).*
- *General Observations: The majority of responses fell into Medication Related Issues (the largest category) and Diagnostic Issues, indicating these are common areas of patient concern. No responses were categorized as Patient-Related Issues – none of the patients' narratives identified the patient's own actions as the cause of the problem. A substantial portion of responses (about 43%) reported some form of harm, but only a smaller subset (around 17%) described a serious actual injury or long-term impact. The General/Miscellaneous Issues category (114 responses) was used for narratives that were either too broad or involved multiple different issues that couldn't be pinned to a single category. These general cases and all others were carefully assigned in line with the refined definitions, preserving consistency for those that had been categorized previously and appropriately classifying the rest.*

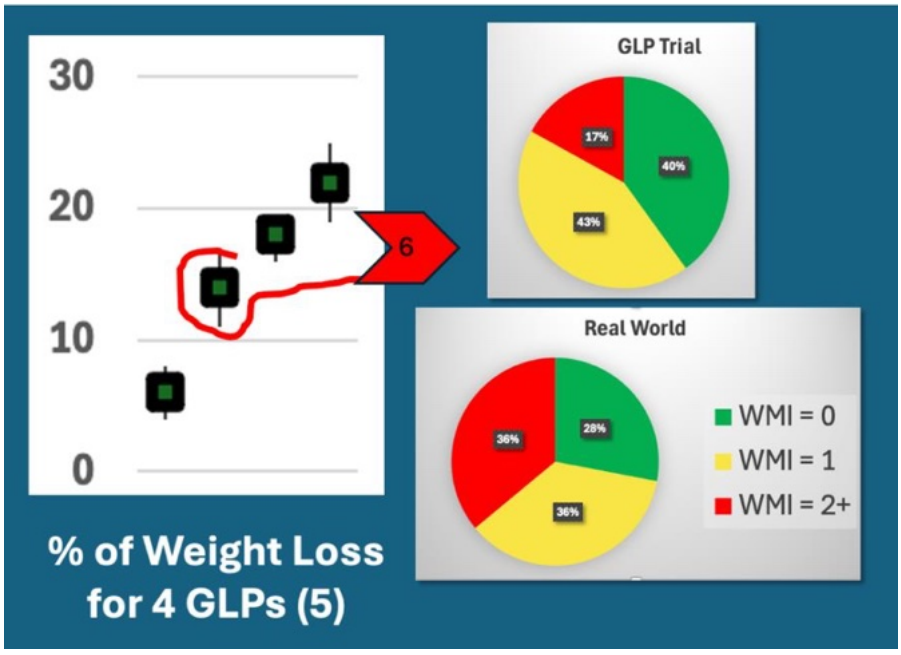
Reducing Population Response Burden By Targetting WMI Higher Risk Patients to Efficiently Gain Insights About Errors, Harms and Avoidable ED or Hospital Use

	WMI Sum of 2 or Higher (n = 8012)	**WMI Sum of Zero or One** (n = 38421)
Errors or Harms	353 (4.2%)	327 (0.8%)
Avoidable ED or Hospital Use*	692 (8.6%)	424 (1.1%)
Either	956 (11.9%)	717 (1.9%)
* Do you think that there was something you or a doctor could have done to avoid the hospital admission or visit to the emergency department? **Yes. Maybe** versus No, I can think of nothing a doctor or I could have done to avoid it. My time in the hospital or emergency department was necessary.		

Weight Loss Medication Insights

A recent Annals Publication tried to compare different formulations of GLP-1 medications for weight loss and concluded with a statement that is all too common for RCTs: "No head-to-head RCTs were available. Heterogeneity prevented meta-analysis." (5)

To estimate how biased RCT results might be, selection criteria for an often-cited RCT of semaglutide were applied to the HYH SAINT data base included in this supplement and identified 22,118 patients. (See 6 in the illustration and reference: the estimated weight loss reported for this study by MOIZ et. al. is circled.



When compared to 42,762 "real world" patients from the HYH SAINT who are obese and potentially eligible the striking difference in WMI risk categorization is obvious in the pie charts. Clearly, and not surprisingly, RCTs focus on patients selected to be "compliant", easy to contact over time, and who have less comorbidities (and poverty). Selection for these attributes make likely a positive impact of the intervention.

5. Areesha Moiz, BSc, Kristian B. Filion, PhD, Helia Toutounchi, MSc, Michael A. Tsoukas, MD, Oriana H.Y. Yu, MD, Tricia M. Peters, MD, and Mark J. Eisenberg, MD, MPH Efficacy and Safety of Glucagon-Like Peptide-1 Receptor Agonists for Weight Loss Among Adults Without Diabetes. Annals Int Medicine. 1/7/2025

6. John P.H. Wilding, D.M., Rachel L. Batterham, M.B., et.al. Once-Weekly Semaglutide in Adults with Overweight or Obesity N Engl J Med 2021; 384:989-1002

Examples from Verbatim Patient Experiences with GLPs

(*and AI commentary in italics*)

Positive Sentiment (62% of responses)

- **"It was very helpful in assisting me to lose weight. I lost 35 pounds and feel much better."** – *Indicates significant weight loss and improved well-being, showing strong satisfaction with the treatment's results.*
- **"I continue to lose weight. Down 50 pounds from 340 pounds. A1c also down – most recent number was 5.7."** – *Shows continued weight loss and improved blood sugar (A1C) readings, a clearly positive outcome.*
- **"Overall, I've had a little nausea but nothing too bad… My doctor has kept my dose low to prevent side effects and it has been just as effective. Overall, I am very happy with the medication and results."** – *Despite minor side effects, the patient emphasizes effectiveness and explicitly states being "very happy" with the results (weight loss from 177 lbs to 128 lbs was noted), indicating a positive experience.*
- **"It is working well for me. Helping me curb cravings, and late night snacks."** – *Expresses that the treatment "is working well" by controlling cravings, implying satisfaction and a beneficial effect on eating habits.*
- **"Transformative – cut food noise and changed my relationship to carbs."** – *Describes the treatment's effect as "transformative," with a drastic positive change in eating behavior (reduced constant thoughts about food and carbs), indicating high satisfaction.*

Negative Sentiment (38% of responses)

- **"Ozempic caused significant nausea, emesis and low mood."** – *Highlights serious side effects (nausea, vomiting, and depressed mood) attributed to the medication, indicating a negative experience.*
- **"I was on Ozempic, but had to stop because of severe constipation and abdominal distress… I had lost about 10% of my body weight, but gained it back when I stopped."**

– While weight loss occurred, the focus is on severe side effects leading to discontinuation and the disappointment of regaining weight, showing clear dissatisfaction and negative outcome.

- **"Side effects are not great."** *– A brief statement that directly conveys unhappiness with the side effects of the treatment, without mentioning any benefits, thus a negative sentiment.*
- **"So far I have not seen any decrease in weight – but I am only on the second month…"** *– Expresses disappointment at the lack of expected weight loss to date. The patient notes no positive change (and even mentions dealing with stress), implying a negative or frustrating experience so far.*
- **"Wegovy has done a good job of suppressing appetite, but the side effects are pretty significant around each injection. Nausea being the most impactful."** *– Even though appetite suppression is acknowledged (a benefit), the emphasis is on the "significant" side effects (notably nausea) with each dose, reflecting a negative aspect of the treatment experience.*

Patient-Reported Considerations for Improving Care Quality Reported to the HYH SAINT (*and AI comments in italics)*

Communication and Provider Attentiveness (42%) *Many respondents wanted better communication from their providers. Common feedback was for doctors to listen more carefully, not rush through appointments, and take patients' concerns seriously. For example, people said:*	• "Doctors need to listen better to what I am saying and stop telling me things I already know." • "Listen to my entire statement without cutting me off or rushing me." • "Perhaps be a little less rushed during appointments." • "Increase my access to my nurse for additional communication about my health.
Appointment Availability and Wait Times (27%) *Respondents frequently mentioned difficulties with scheduling and long wait times. They suggested offering more appointment availability (including extended hours) and reducing waiting periods. For example:*	• "Easing the ability to get an appointment when you are sick." • "Expanded evening hours." • "Wait times at the office are often very long. I think this could be managed better." • "Not all of us have access to internet. It'd be easier to make appointments by phone."
Insurance and Billing Issues (16%) *Cost and insurance coverage were also common concerns. Many respondents asked for broader insurance acceptance and help with healthcare expenses or billing clarity. Examples of feedback include:*	• "Accept my insurance, XXX." • "Have more information easily available on costs." • "Help me understand my insurance benefits — it's bewildering!" • "Make naturopathic, acupuncture, and nutrition services available to all by insurance coverage — it would be tremendously cost effective."
Holistic and Preventive Care Focus (9%) *These respondents want the practice to support whole-person health – for example, integrating lifestyle changes, diet/exercise guidance, or complementary medicine into care. Four representative quotes from this subtheme are:*	• "A little more emphasis on holistic approaches." • "I would like more input regarding preventive actions in my life, and support with nutrition decisions." • "Prevention – and rewards for those who prevent chronic illness and lead healthy lifestyles!" • "Include more mental health questions."
Care Coordination and Continuity (6%) *Patients expressed frustration with fragmented care – for example, seeing multiple providers, navigating referrals, or lack of follow-up. Representative quotes include:*	• "Enhance continuity of care by assigning and keeping the same PCM (primary care manager) to each patient – if possible. I've seen three different providers in less than one year." • "I think it would help if the doctors would do more follow-up on their patients, especially after prescribing medications or treatments." • "Referrals are not handled in a proper manner at times." • "The referral process and jumping through hoops to get what is needed for proper follow-through is challenging."

Of interest in the HYH SAINT data base is the observation that patients who rate their care at the very highest levels suggest the same top improvements as patients who rated their care lower. The difference was that 36% of the very-satisfied group used the open feedback question to write a purely positive comment about their care (essentially just praise), whereas only 14% of the less-satisfied group did that. In other words, regardless of their current satisfaction level, patients tend to identify the *same* priority areas for making care better.

Iterative, AI-Driven Improvement in Patient-Centered Care Using Abdominal Discomfort as an Example

Patient-centered care thrives on iterative, feedback-based improvement – a cycle of trying new approaches, learning from results, and refining care. In modern practice, we often gather patient-reported outcomes and use artificial intelligence (AI) to categorize patient input. These standardized measures and AI-driven analyses provide an efficient and honest picture of what patients experience. However, the story doesn't end with neat categories or initial interventions. To truly improve care, clinicians must rapidly test changes and feed the results back into practice, creating a continuous learning loop. This discussion uses persistent abdominal discomfort as an example to illustrate why such an approach is needed and how it can work in practice.

Abdominal Discomfort: Common Yet Complex

Abdominal symptoms are an ideal example because they are both very common and highly complex. The abdomen contains many vital organs, so pain or discomfort in this area can stem from a wide array of conditions. An acute abdominal emergency (like appendicitis or a perforated ulcer) often has an obvious cause and clear treatment. In contrast, persistent or intermittent abdominal discomfort – pain that keeps coming back or never fully goes away – can be ambiguous and challenging to diagnose. In fact, most patients with chronic abdominal pain have extensive evaluations that fail to pinpoint a single cause. This complexity means that a one-size-fits-all approach rarely works. Patients might have a mix

of physiological and functional issues, and how they cope day-to-day becomes just as important as finding a definitive diagnosis.

One important indicator of how well a patient can cope with ongoing symptoms is their health confidence. For example, in one study of patients with inflammatory bowel disease, those with low health confidence had a markedly higher risk of complications over the next 6–12 months. In fact, low-confidence patients experienced up to seven times more adverse health events in that time compared to patients who felt confident managing their condition. This highlights that beyond the clinical details of a case, a patient's mindset and self-management ability significantly influence their trajectory. (7)

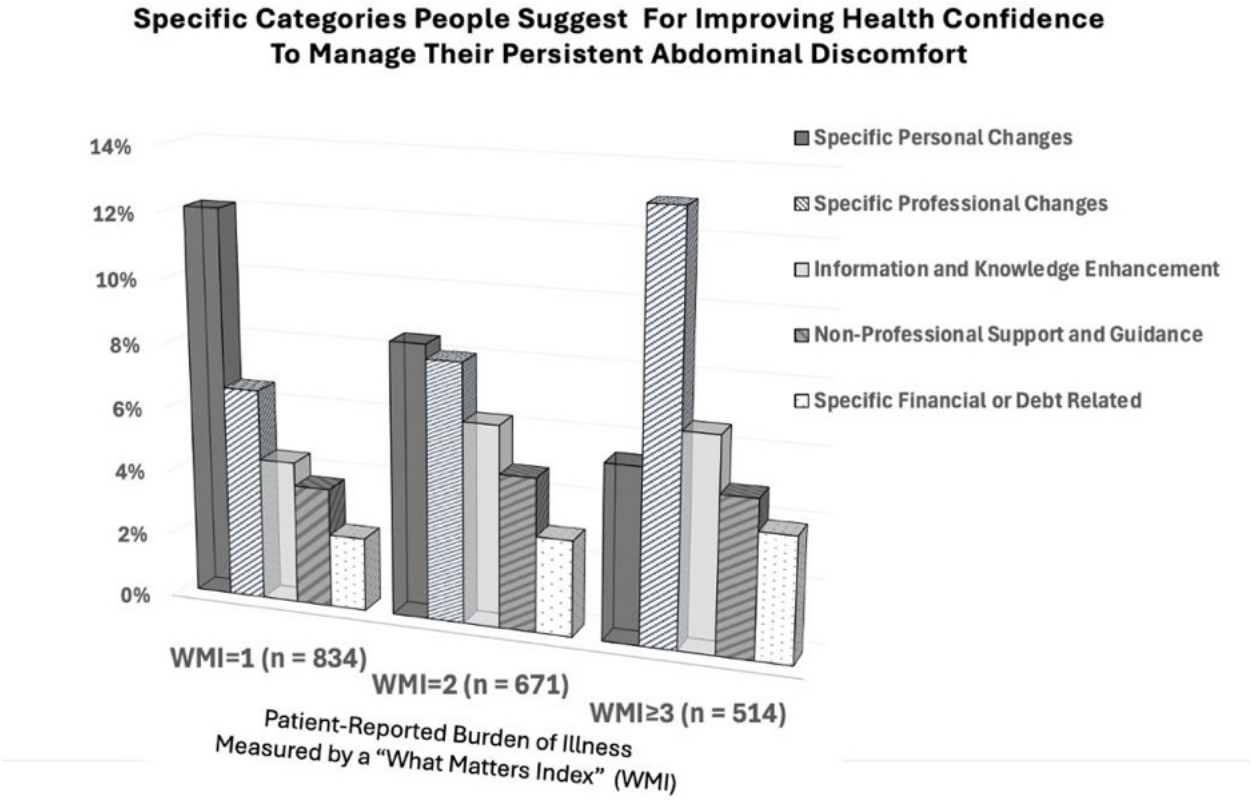
From Patient Feedback to AI Insights

Modern patient-centered care encourages us to listen to patients and leverage technology to make sense of what we hear. In the case of persistent abdominal discomfort, patients often suggest various strategies they use to manage their symptoms. These might range from home remedies (like dietary changes or heating pads) to seeking specialist consultations or therapy. Using AI to categorize these patient-suggested strategies can reveal patterns that inform care.

This Figure ties how heavy or complex their overall health situation is. A low WMI score indicates the patient has fewer complicating issues, whereas a high WMI score signals multiple challenges or high needs. When AI analyzed how patients with different WMI scores cope with persistent abdominal discomfort, a clear trend appeared: patients with lower illness burden (low WMI) tended to favor self-guided strategies for relief, while patients with higher burden (high WMI) relied more on professional support.

In practical terms, someone with a low WMI might report using relaxation techniques, over-the-counter aids, or diet adjustments to control their abdominal discomfort. These self-management approaches suggest that the patient has enough confidence and bandwidth to guide their own care. On the other hand, a patient with a high WMI – juggling perhaps other chronic conditions, significant pain, or stress – might gravitate toward seeking help from professionals, such as calling nurses frequently, consulting gastroenterologists, or

engaging in therapy for pain management. The AI-driven categorization essentially sorted patient strategies by complexity, matching the level of self-management versus professional care to the patient's overall burden.



Matching Support Intensity to Patient Need

This insight points to a testable, tailored approach for managing persistent abdominal discomfort (and potentially other symptoms). Instead of giving every patient the same advice, clinicians can stratify support based on illness burden. Specifically, patients could be offered care that matches their needs:

Lower complexity - (WMI 0-1): Provide low-intensity supports. For example, a patient with relatively few other health issues might benefit from a smartphone app that teaches cognitive-behavioral therapy (CBT) techniques for pain coping, or other digital self-management tools. These interventions are accessible, patient-driven, and can bolster the individual's own capacity to manage discomfort.

High complexity (high WMI 2+): Provide more intensive, professional supports. For a patient dealing with many health challenges or distressing symptoms, a more guided approach may help. This could involve a nurse-led or therapist-led CBT program focused on abdominal pain, regular check-ins for symptom management, or multidisciplinary care (such as involving nutritionists, pain specialists, and counselors). Professional support ensures these patients don't have to carry the heavy burden alone.

The algorithmic care pathway (outlined previously) operationalizes this idea. The algorithm uses the patient's WMI score and symptom profile to triage them to the appropriate level of care. In essence, it asks: "How much help does this person likely need?" A patient with a low WMI and moderate abdominal discomfort might be routed to a self-management track with educational resources and an app-based coaching program. In contrast, a patient with a high WMI and persistent pain could be routed to a care manager who engages them in a structured program (like nurse-guided CBT or frequent follow-up calls) (8). This kind of AI-informed triage ensures efficiency (patients get the level of support they need – not too little, not too much) and honesty (the categorization is based on real patient-reported data, not just clinician intuition).

Rapid Feedback Loops for Continuous Improvement

Designing such patient-centered interventions is only the first step. The real power lies in continuous improvement: refining these interventions through rapid cycles of testing and feedback. This is where collaborating practices and real-time data come in. If multiple clinics adopt the stratified approach (low vs high intensity supports based on WMI) and track patient-reported outcomes over time, they generate a wealth of feedback. AI tools can continually analyze this incoming data – for instance, checking if low-WMI patients indeed do well with the app-based strategy, or if certain high-WMI patients still struggle despite intensive support. When something isn't working as hoped, the approach can be quickly adjusted. Perhaps the app needs tweaking, or maybe some low-WMI patients would benefit from a bit more guidance – those insights emerge from the data and can prompt an immediate change in the care algorithm.

This collaborative, data-driven approach essentially creates a learning health system. Instead of waiting years for a large clinical trial to prove a concept, practices can learn and improve in near real-time. Traditional research tends to be slow – it might require major grants, lengthy enrollment, complex analyses, and time-consuming publication processes before findings trickle into practice. By that time, many opportunities to help patients may have been missed. In contrast, an iterative feedback loop powered by patient experience can bypass these long timelines. Each small cycle of change and measurement is like a mini-experiment, and the results are immediately fed back to clinicians. Successful strategies spread quickly within the network of practices, and less effective ones are rapidly refined or replaced. The goal is to enable real-time learning and care improvement driven directly by patients' experiences and outcomes.

In summary, achieving truly patient-centered care requires marrying high-tech tools with agile learning processes. Standardized patient-reported measures and AI algorithms give us honest, efficient insights into what patients are going through – but we must remain adaptable, continuously testing and honing our approaches based on feedback. Persistent abdominal discomfort illustrates how nuanced patient needs can be, and how critical it is to tailor support (from self-help apps to professional care) to everyone's situation. By working together in a learning loop, clinicians and patients co-create better solutions: each intervention is not an end point, but a starting point for further improvement. Over time, this cycle of rapid feedback and adjustment can dramatically elevate the quality of care, all while keeping the patient's voice and experience at the center of every decision.

7. Chung Sang Tse, Gil Melmed, Chien-Hsiang Weng, Samir Shah, Alandra Weaver, Brant Oliver, Glyn Elwyn, Corey Siegel, Welmoed van Deen. Longitudinal Study of the Impact of Health Confidence on Inflammatory Bowel Disease Outcomes and Healthcare Utilization. Gastroenterology, Volume 162, Issue 3, Supplement, 2022, Pages S91-S92, doi.org/10.1053/j.gastro.2021.12.192.

8. Ahles, T. A., Wasson, J. H., Seville, J. L., Johnson, D. J., Cole, B. F., Hanscom, B., et al. (2006). A controlled trial of methods for managing pain in primary care patients with or without co-occurring psychosocial problems. The Annals of Family Medicine, 4(3), 341–350.

Quality of Life Research (2021) 30:3145–3155
https://doi.org/10.1007/s11136-020-02528-z

SPECIAL SECTION: FEEDBACK TOOLS

Standardized assessment, information, and networking technologies (SAINTs): lessons from three decades of development and testing

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Accepted: 12 May 2020 / Published online: 25 May 2020

Abstract

Purpose To rectify the significant mismatch observed between what matters to patients and what clinicians know, our research group developed a standardized assessment, information, and networking technology (SAINT).

Methods Controlled trials and field tests involving more than 230,000 adults identified characteristics of a successful SAINT—www.HowsYourHealth.org—for primary care and community settings.

Results Evidence supports SAINT effectiveness when the SAINT has a simple design that provides a service to patients and explicitly engages them in an information and communication network with their clinicians. This service orientation requires that an effective SAINT deliver easily interpretable patient reports that immediately guide provider actions. For example, our SAINT tracks patient-reported confidence that they can self-manage health problems, and providers can immediately act on patients' verbatim descriptions of what they want or need to become more health confident. This information also supports current and future resource planning, and thereby fulfills another characteristic of a successful SAINT: contributing to health care reliability. Lastly, SAINTs must manage or evade the "C-monsters," powerful obstacles to implementation that largely revolve around control and commercialism. Responses from more than 10,000 adult patients with diabetes illustrate how a successful SAINT offers a standard and expedient guide to managing each patient's concerns and adjusting health services to better meet the needs of any large patient population.

Conclusion Technologies that evolve to include the characteristics described here will deliver more effective tools for patients, providers, payers, and policymakers and give patients control over sharing their data with those who need it in real time.

Keywords Patient engagement · Risk assessment · Health confidence · What Matters Index · Howsyourhealth.org · Guided healthcare

Background and methods

Health care providers have historically relied on patient statements to diagnose conditions and direct treatments. Since the advent of formal health care quality assessment in the 1960s [1], standardized patient-reported measures have become a tool for explicitly enumerating needs and documenting providers' progress toward meeting those needs [2].

In the 1980s, our practice-based research network documented a significant mismatch between patients' reports of their physical and emotional problems and what clinicians knew about those problems, if they knew anything at all [3, 4]. The implications of this mismatch for patient health and satisfaction with care provoked us to identify eight single-item measures of patient physical, emotional, and social function that could be used both to guide service and to monitor change [5]. The World Organization of Colleges, Academies and Academic Associations of General Practitioners/Family Physicians quickly adopted these measures, called the Dartmouth COOP Functional Assessment Charts, and translated them for worldwide use [6].

By the early 1990s, Rubenstein et al. had conducted a controlled trial to test whether a complex, multi-variable measure of patient function—the SF-36—could "be used by physicians in practice to help improve their patients' outcomes" [7, 8]. Concurrently, our research group conducted a controlled trial of the Dartmouth COOP Charts to assess the short-term effects of that approach on the process of care and patient satisfaction [9]. The SF-36

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study found "no significant differences between experimental and control group patients at exit from the study on any functional status or health outcome measure" and concluded that a "more powerful intervention … is needed to help office-based internists improve patient outcomes" [8]. In the Dartmouth COOP Chart study, we found a small improvement in satisfaction with pain management, yet no significant impacts on patient or population health.

These early studies indicated the need for both explicit information that will be useful to care providers and service feedback loops between providers and patients. Over the next several decades, we therefore tackled the challenge of designing efficient feedback systems to enhance the impact of our assessment measures by alerting clinicians to patients' self-reported needs—the necessary first step for helping them. As our assessment, information, and networking technology evolved, clinicians in our research group field-tested the various adaptations.

In a controlled study conducted in 1999, we compared responses from 832 elderly patients who merely received the self-assessment survey with responses from 819 intervention patients who received the survey in conjunction with automated need-specific instructions, and whose responses were automatically relayed to their physicians [10]. The patients in the intervention group felt their physicians were better informed of their needs and reported greater understanding of their health risks, as well as help with limitations in daily activities, emotional issues, and social support. Over the 2-year study period, eight of the 11 intervention practices improved their relative standing with regard to how their patients judged them. Only one of the 11 usual care practices showed this improvement.

Another controlled trial in 2006 tested web-based messaging between 47 physicians and 644 adult patients with pain and emotional problems [11]. The results of this study showed sustained improvement in patients' pain and function at 6 months when our computerized system was combined with a problem-solving intervention supported by a nurse educator.

In summary, the Dartmouth COOP Charts' simple measures of what matters became the starting point for a standardized assessment, information, and networking technology (SAINT). To date, more than 200,000 patients aged 19–69, 30,000 aged 70+, and 10,000 adolescents and children have used versions of our SAINT, www.HowsYourHealth.org, for guiding clinician action on needs that matter and improving patient health and satisfaction [12]. Thus, the following observations of the characteristics of an effective SAINT are based on decades of field tests and controlled trials and the responses of many users.

Characteristics of an effective SAINT

Easy to use: provides a service that is simple and cheap

To evaluate patient function, population health, or practice performance, and to allocate reimbursements to clinicians and health care systems, policymakers and payers have adopted many multi-item patient-reported instruments, such as the SF-36, the more recent PROMIS-29 and PROMIS-10, and many versions of CAHPs [13–16].

We designed our SAINT as a simple automated feedback system for the front lines of health care delivery, where patients and clinicians immediately co-produce a service. We emphasized single measures to improve efficiency, encourage participation, and stimulate action, and we showed that single queries of patients are both appropriate and more cost-effective as substitutes for several multi-item measures in evaluations of: practice quality (compared to CAHPs) [17], domains of patient function (compared to SF-36) [5], and patient engagement (compared to six measures for confident self-management contained in a Patient Activation Measure) [18].

Another consideration critical to the design of an effective SAINT is that clinicians have to operate on a lean business model and expect low direct and indirect costs for front-line users. SAINTs are commodities that must compete with hundreds of thousands of health care applications, and in the USA, the measurement industry is increasingly considered a source of significant health care waste, such that high pricing is not likely to be tolerated [19–22]. Fortunately, as our SAINT evolved, the internet came to provide a very inexpensive alternative to our earlier distribution methods, which had relied on scannable paper bubble forms, bar codes, and touchscreen kiosks. The web-based SAINT has allowed us to make it available to any interested health care providers at no cost through www.HowsYourHealth.org. The internet has also allowed schools and municipalities to disseminate our SAINT widely without cost [12, 23–25].

Thus, a successful SAINT must aim to serve, not just survey. Our SAINT was developed for people aged two and older and includes tools that support general problem-solving and decision-making, as well as special versions for homebound patients and those in the hospital [26, 27]. Variations of the SAINT have also been developed to comply with different types of regulatory requirements, including those of the Center for Medicare Services and state Medicaid authorities, as detailed at https://howsyourhealth.org/static/HYHModifications.pdf.

Guides action: reduces clinician guesswork about what matters to patients

Measurement systems designed principally for retrospective population analyses are of little use to health care providers, who need prospective guidance for individual patients. Therefore, a service-oriented SAINT must enable timely, easily interpretable patient reporting that guides action.

As more and more people used our SAINT, health confidence emerged as one of the measures that mattered most to most patients [28], and exemplified a measure that could guide action for providers, patients, and community services. Health confidence is a single-item measure of overlapping concepts of self-management capacity, engagement, self-efficacy, and activation [29–31]. People who are designated as health-activated, or those who simply report confidence that they understand and can manage most of their health concerns, use fewer costly health care services [18, 31–33]. When a practice routinely measures and responds to health confidence, costly care use seems to decrease [34, 35], and many other patient-reported outcomes such as healthy eating and risk reduction are associated with health confidence [31].

Health confidence is also a good indicator of effective communication between patients and clinicians. For example, after adjusting for baseline characteristics, more than two thirds of patients who became more confident over time also reported that their clinicians were aware of and provided good education about emotional problems [36]. Another example showed a strong correlation between the health confidence of patients with asthma, diabetes, heart disease, high cholesterol, or hypertension and the extent to which clinicians allowed these patients time to ask questions, encouraged their involvement in decision-making, and explained care in language that was easy to understand [18].

Health confidence is undermined by pain and emotional problems [36]. With this knowledge, we investigated the possibility that a few measures, including health confidence, pain and emotional problems, and perceptions of adverse medication effects, might be more clinically useful than algorithm-based predictions generated from administrative data. We found that only five measures, called the What Matters Index (WMI), could together forecast future costly care, immediately guide care for most patients, and were a suitable proxy for patient quality of life [37–39]. Table 1 lists the WMI questions and possible actions a medical assistant might take in response to patient answers to each measure.

Although our SAINT includes health confidence and the WMI in a more comprehensive platform that connects patients, providers, and community-based support services,

Table 1 The What Matters Index and recommended actions based on responses

Patient-reported measure	Examples of medical assistant actions for concerns or problems
Insufficient health confidence	
How confident are you that you can manage and control most of your health problems? *(Not very confident or somewhat confident scored as 1, versus very confident scored as a zero)*	You indicated that you are only somewhat or not very confident to manage and control your health problems. The health problems you find most difficult to manage and control are: ——— What would it take to increase your health confidence to better manage and control these problems? ———
Pain	
During the past 4 weeks how much bodily pain have you generally had? *(Extreme or moderate pain scored as 1, versus none, very mild or mild scored as a zero)*	Is your doctor or nurse aware of pain or emotional problem(s)? Yes No or not sure → referral to health professional How much is (are) your pain/emotional problem(s) making it difficult for you to be confident about managing your health?
Emotions	
During the past 4 weeks how much have you been bothered by emotional problems such as feeling anxious, irritable, depressed, or sad? *(Extremely or quite a bit scored as 1, versus not at all, a little or somewhat scored as a zero)*	Making it very difficult Making it somewhat difficult Not much impact
Polypharmacy	
How many prescription medicines are you taking more than 3 days a week? *(More than five scored as 1, versus 5 or less scored as a zero)*	The last time a health professional reviewed them with the patient or caregiver was more than 2 months (or not at all) → referral to a health professional
Adverse effects from medicines	
Do you think any of your pills are making you sick? *(Yes or maybe scored as 1, versus no scored as a zero)*	

The "What Matters Index" is the sum of the five binary scores with an index of zero meaning lowest reported problems and an index of five meaning highest reported problems

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a SAINT could also be effective using only health confidence or the WMI. A very brief SAINT could be offered on paper or a handheld device as a population-based screener to guide care and serve as a gateway for further inquiry. Figure 1 illustrates the logic and flow of WMI screening in our current version of www.HowsYourHealth.org.

Guides resources: contributes to health care reliability and resource planning

Absent adequate preparation, merely knowing what matters to each patient is not a guarantee that a small office practice or a larger health system will have exactly the resources most patients want and need exactly when and how the patients want and need them. Resource planning, as this preparatory activity is often called, has been the subject of decades of health services research. For example, Wagner identified several essential properties of successful health systems, founded on the understanding that effective chronic care management requires productive interactions between engaged patients and prepared, proactive providers [40–42].

Building on that work, our research group described how clinical microsystems can apply the model's principles at the practice level. Our work showed that effective clinical microsystems must allocate resources based on the measurement and analysis of what matters to patients, always aiming to maximize the productivity of each patient interaction—no matter how brief—with planned, proactive care [43]. Thus, a WMI-based SAINT supports productive interactions that immediately serve patient needs. By standardizing the interaction, automating the information exchange, reducing clinician guesswork about what matters, and guiding subsequent clinical responses, this SAINT facilitates effective care and also signals where and how to focus resources. We have shown that this patient-centric approach, when extended to all patients, is associated with improved service quality [34, 35].

Specifically, before an office visit, our SAINT asks patients who are not health confident what they want or need to become more health confident, so that at the time of the office visit, staff will already know what resources are required to meet each patient's needs. As more and more patients use this SAINT, their aggregated data indicate the sum of resources required to meet most patient needs most of the time. We have used a similar process to identify causes of unnecessary or harmful care [44], and those data guide resource planning away from unproductive or even counterproductive investments. The quality-of-care information produced by our SAINT is also increasingly accepted by those who pay for, certify, and regulate health care [45, 46].

This approach stands in stark contrast to current health resource planning in the USA, where fragmented and inconsistent health care, delivered at multiple points of service, erodes reliability for both the affluent and the poor [47]. While hospitals and practices are major contributors to this problem, service fragmentation extends to community resources as well. For example, a physician member of our research group tallied health care-related contacts for 386 older persons living in a community of 2600 inhabitants and discovered more than 30 stand-alone organizations

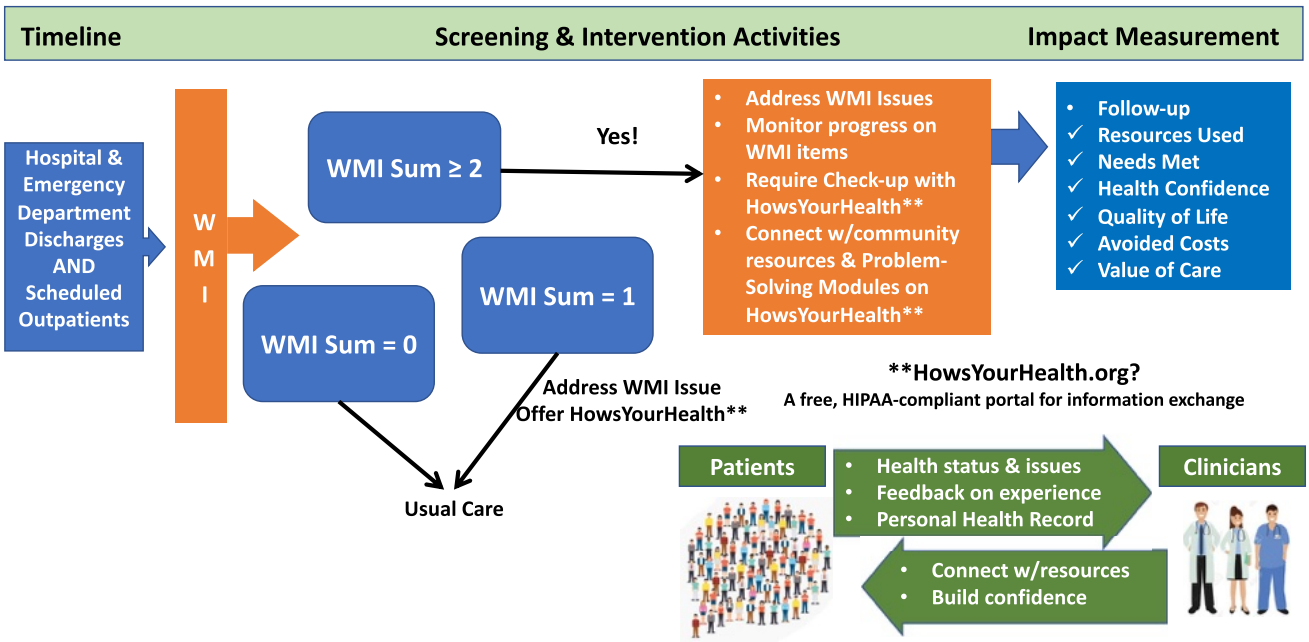

Fig. 1 The What Matters Index as an effective SAINT: an immediate guide for care to reduce risk for costly emergency or hospital use

representing generalist care, specialty care, nursing care, and social services. Without a tool that measures and analyzes patients' self-reported resource needs, none of these organizations can predict what resources they should have available, let alone coordinate with each other to reduce waste and maximize efficiency.

Heeds the C-monsters: content, confidentiality, control, consent, culture, cost, copyright, coding, and commercialism

During the evolution of our SAINT, feedback from patients, providers, payers, and policymakers pointed to certain hazards that will limit a SAINT's value, dissemination, and sustainability, and will ultimately result in failure to improve patient health and satisfaction.

First, the SAINT must get the goal right: The SAINT's content should support service, not just measurement or reimbursement. Unless the patient and clinician see immediate benefit, the SAINT is likely to fail, regardless of its elegant appearance and psychometrics.

From the patient's perspective, the SAINT must also support confidentiality, control, and consent. Our SAINT assures these with a privacy design that assumes patients expect absolute control over their identifying information, and do not want to be subjected to advertising or conflicts of interest. The European Union recently codified these standards in the General Data Protection Regulation. However, in the USA, a SAINT may be accessible only through a hospital-sponsored portal that links the responses to a medical record, and people are often reluctant to give up personal identifiers just to complete a questionnaire of unknown content and purpose. For these reasons, our SAINT—www.HowsYourHealth.org—allows completion before collecting identifiers, and offers patients a personal, portable health plan with no identifiers. To support patients' cultural needs, we have found that translation into another language and back to the original before dissemination can identify inappropriate interpretations and unsuitable cultural content.

From the clinician's perspective, a SAINT must avoid the high costs associated with the hazards of copyright enforcement, proprietary coding, and commercialism. For these reasons, we have always made our SAINT freely available and adaptable for research and practice without charge and only request that the copyright source be listed. Proprietary coding often obstructs customization and communication, and commercialization, exemplified by the many hundreds of competing, incompatible electronic medical records in the USA, obstructs co-production of care and resource planning among clinical settings.

Based on observations over decades of experience, Table 2 suggests characteristics that are likely to enhance a SAINT's value, dissemination, and sustainability … and evade the "C-monsters."

Principles into practice and policy: an illustration for patients with a chronic condition

This section shows how our SAINT leverages the simple measures of health confidence and the WMI to guide care toward what matters to patients and to improve health care reliability by standardizing service. Figure 2 illustrates the wide variation in health confidence levels across hospital service areas (HSAs) in the USA, for 73,338 adult patients with any chronic condition in 608 HSAs, at left, and 4446 adult patients with diabetes in 77 HSAs, at right. The health confidence data were drawn from HowsYourHealth.org and matched with geographic HSAs based on ZIP codes aggregated by the Dartmouth Atlas of Health Care [48]. Analyses based on the presence or absence of poverty, pain, and/or emotional problems shift the mean and median of the data in the figure but do not meaningfully lessen the population-level variation in health confidence across these HSAs.

Unreliable delivery of health care services has long been recognized as the cause for undesirable variation, for which quality management via standardization is a potent corrective [49]. To reduce variation, practitioners have used our SAINT to proactively ask every patient with low health confidence what would be most likely to help them gain confidence. As an example, Fig. 3 summarizes the relationship between what patients with diabetes said they needed to become more health confident, in relation to their WMI scores. In this example, respondents with higher WMI scores were more likely to identify a need for professional assistance, and less likely to believe that changes in their personal behavior would improve their health confidence. In addition to understanding what matters to each patient now, the practice can plan for future service demands knowing both the distribution of its patients' WMI scores and the verbatim responses of many respondents.

Absent a standard report from each patient about what matters, both generalist and specialist clinicians confront the dilemma shown in Table 3. This table summarizes self-reports on a range of topics from more than 10,000 patients with diabetes, as well as these patients' diagnoses, risks, and service use. The table sorts the patients by their WMI scores, and patients with higher WMI scores can clearly be seen to report far more extensive symptoms, limitations, and concerns, and less engagement in self-management. These patients are also much more likely to be burdened by co-occurring health conditions and to use potentially avoidable costly care.

Table 2 Suggestions for enhancing SAINT value, dissemination, and sustainability

√ or	If no √, this is a threat	Explanation
Enhancing SAINT value		
	Goal: patient quality of life	Patients' engagement is highest when the SAINT generates service for what matters to them; measurements for comparison and process adherence are secondary
	Stakeholder: the patient-clinician dyad	Although payers, purchasers, and policymakers can be partners, front-line engagement of both the patient and clinician is critical for success and co-production of best care
	Focus: data guides action	Service, not just survey: multi-item, psychometrically elegant data are often not intended for action
	Latency: short	Long latency and retrospective data undermine accuracy and action
	Stratification: offer a registry	Data are used to sort groups of patients for subsequent interventions
	Customizable: for practice	Facilitates adaption to and adoption in multiple settings
	Portable: for patient	Enhances recall, useful communication with others, updating and monitoring
	Improving: summaries	Ongoing assessment of clinician and practice performance
	Behavioral: automates	Minimizes variation and effort needed to implement initial behavioral interventions
	Links: community and other	Minimize to only highly relevant links
	Online consent: for follow-up	Useful to the practice or clinician for longitudinal quality and research projects
Enhancing SAINT dissemination		
	SAINT product design: simple	Start with the core functions and basic display; continuously test variations
	Process fit: timing	Reduce initial patient implementation target by half and double the time
	Helper: patient volunteers?	Patients of practice may volunteer to assist; build on small successes
Enhancing SAINT sustainability		
	Engineer at outset: small burn	Burn refers to the amount of money needed to design and maintain
	C-Monsters: be vigilant	Watch out for the most common destructive forces: high burn rates and loss of control
C-Monsters—adversely influence value, dissemination and sustainability		
	Content	Minimize medical advice to decrease liability; there are few insurers who cover SAINTs
	Consent for identifier (privacy)	Offer best content regardless of patient identifier; postpone identifier to later in process
	Control	Business models and regulations of a country impact who and how a SAINT is controlled; consideration of the short- and long-term consequences is necessary
	Culture	Translation of measures into another language and back to the original before widespread dissemination to mitigate obscure interpretations or unsuitable cultural content
	Copyrighted materials	High value SAINTs should allow fair use; avoid expensive and restrictive licenses
	Computer coding	Open source software provides common, time-tested code to minimize maintenance
	Confusing commercialism: e.g. electronic Medical record	Proprietary interests and inflexibility impede data import; priorities should support patient/clinician coproduction of care and a patient-controlled portable health plan/record
	Certification	Adopt the highest ethical standards; then estimate the added value of certification

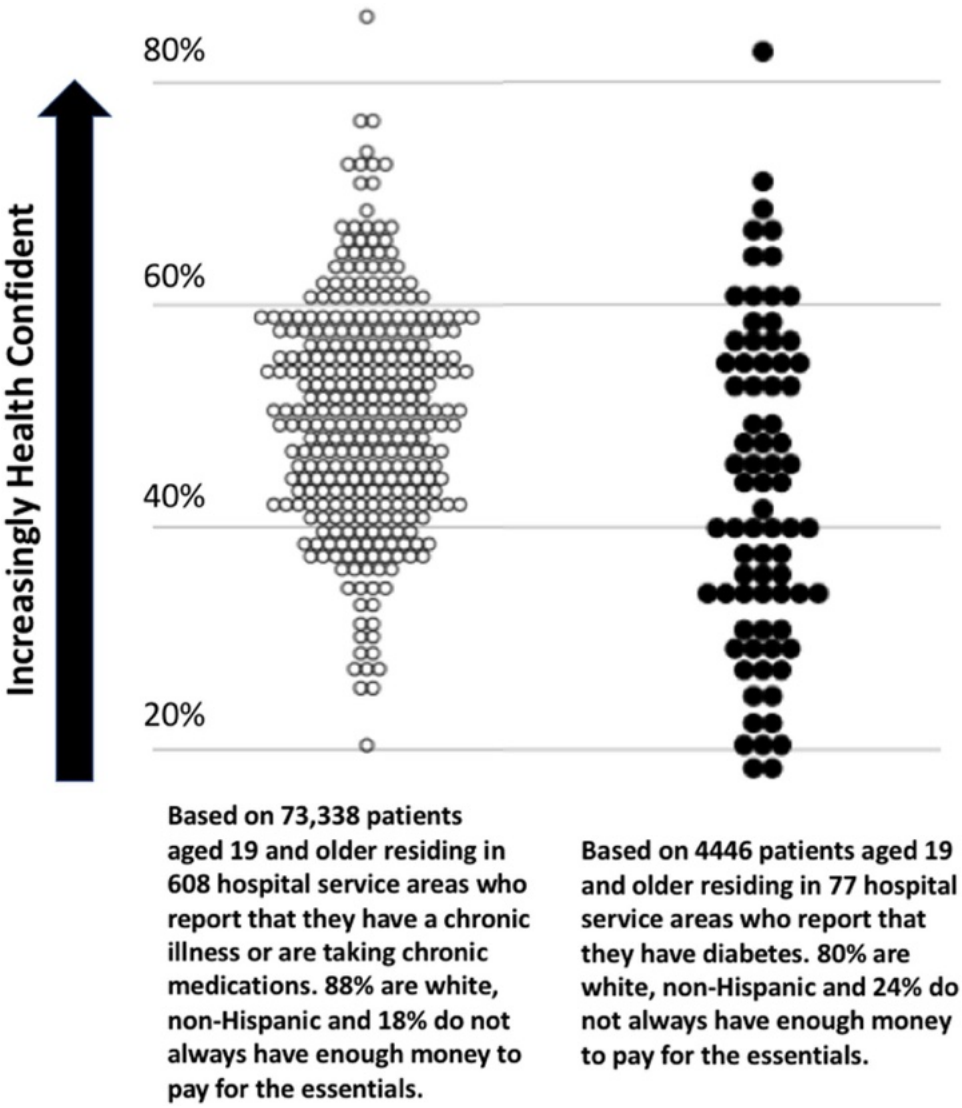

Fig. 2 Percent of patients in US hospital service areas (HSAs) reporting they are very confident that they understand and can manage most of their health problems; data from HowsYourHealth.org were matched with HSAs defined by the Dartmouth Atlas of Health Care [48]

Thus, the conundrum facing any general or specialty care provider: During a brief face-to-face visit, often interrupted for documentation and billing activities, which of the many symptoms, illnesses, functional limitations, and aggravating lifestyle challenges should be the focus?

Historically, it was assumed that health care professionals could rely on clinical judgment to determine the most important focus and prescribe an appropriate treatment. However, clinicians can easily come to different conclusions based on how they interpret information and the contexts in which they work, including whether they provide specialty or generalist care, and in what setting. When deference to professional opinion is the predominant strategy, unreliable and ineffective care is often the result [50].

In recent years, payers and policymakers have promoted algorithm-based prediction instruments that use administrative and medical record data to identify very short lists of patients at risk for costly care, and have then incentivized clinicians to direct more time and services to these patients. A typical algorithm would categorize as high risk for costly care about 10% of the patients in Table 3 based on criteria of an additional diagnosis of serious atherosclerotic cardiovascular disease and a recent hospital admission or emergency department use.

However, predictive analytics and "hotspotting" strategies are proving to be inaccurate, cost-ineffective, and unethical because they direct resources away from the many patients not designated at-risk who are in fact destined to need costly care [38, 50]. The 10% of patients identified by those approaches will have a plethora of the issues listed in Table 3, and faced with this complexity, generalist and specialist clinicians justifiably fall back on their highly variable clinical judgments, often focusing on "sugar control" or other narrowly circumscribed clinical parameters. However, the selected focus is seldom, if ever, the only important challenge and may be subordinate to

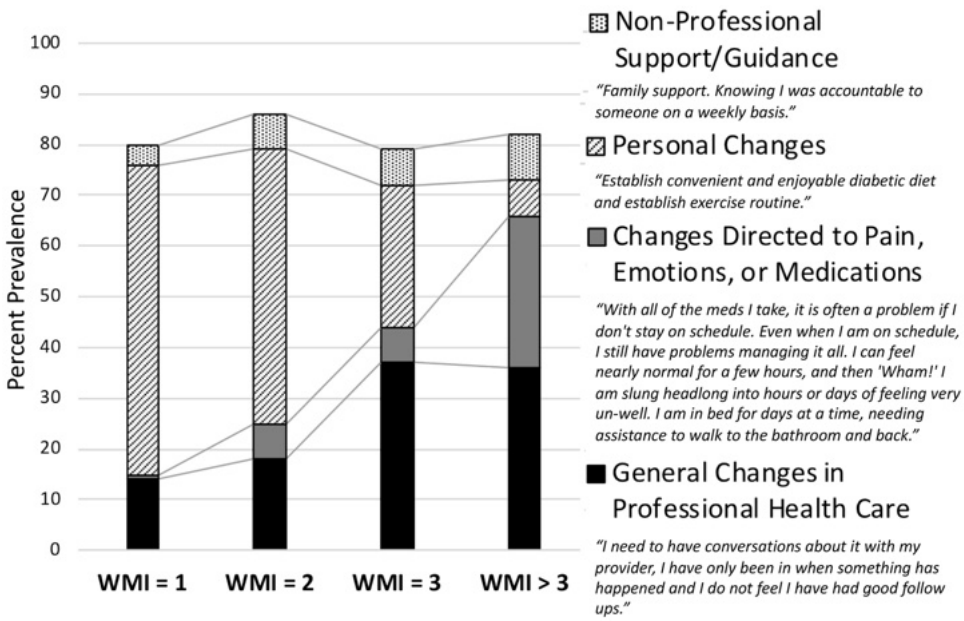

Fig. 3 Patients with diabetes describe what they need to attain greater health confidence: Based on verbatim responses, exemplified at right, of more than 600 patients collected via HowsYourHealth.org since 2017, excluding "don't know" or uninterpretable responses. The *WMI* (What Matters Index) is the sum of five patient-reported problems and concerns: **a** insufficient confidence to self-manage health problems, **b** pain, **c** bothersome emotions, **d** polypharmacy, and **e** adverse medication effects

problems that impose greater burdens on these patients and the health system.

In contrast to the limitations of targeting a few outlier patients at risk for costly care based on old data, our SAINT's WMI provides a timely, easy-to-interpret, actionable, and reliable foundation for predicting risk and organizing care, both within a practice and throughout a service area, with progress on any of the WMI measures likely to mitigate many associated problems. For example, when patients report that they are not health confident, the software asks them what they believe will be most helpful to improve it, and then sends the verbatim patient response to the clinician as part of a summary of the patient's responses to every WMI item.

Consider two clinics that provide care to only patients with diabetes. Based on a sample of 30 patients in each clinic who complete the WMI, Clinic A recognizes that 70% of its patients have a WMI of 1 or less, whereas Clinic B learns that 70% have a WMI of two or more. From the information in Table 3, many patients in both clinics will require assistance to become more health confident. However, Clinic B will need to plan more resources to enhance its vigilance for adverse impacts of medications and support for the management of pain and emotional problems. The higher prevalence of patient poverty and social isolation presents an additional resource challenge for Clinic B.

In summary, this illustration calls to mind a useful analogy: that the diagnostic labels we give each patient are merely suitcases containing a jumble of symptoms, associated illnesses, aggravating lifestyle challenges, health-related concerns, functional limitations, and social factors. The WMI provides a standard and expedient handle for a generalist or specialist to move each patient's suitcase toward the patient's desired destination. Different diagnostic suitcases can use the same WMI handle.

Conclusion

This report summarizes lessons from three decades of using a standardized assessment, information, and networking technology (SAINT). For patients with chronic conditions, the evidence supports SAINT effectiveness at improving patient health and satisfaction when the technology immediately serves patients and engages them and their clinicians in the co-production of better care.

We have emphasized the advantages of a What Matters Index (WMI) as a parsimonious starting point for almost any SAINT. The WMI has no direct cost and is unambiguous, highly accessible, and strongly correlated with patient-reported quality of life. The WMI has also proved reliable in predicting future costly care for poor and not-poor patients with and without chronic conditions [38], and the reduced variance in interpretation facilitates resource planning and thereby maximizes value and reliability. Thus, generalist and specialist clinicians who use a SAINT that contains the WMI are likely to avoid common obstacles to the co-production of high-quality health care [51].

This report's focus on the WMI raises a legitimate concern about the inclusion or exclusion of other patient-reported measures or indices derived from a combination of measures. Because of the heterogeneity in patients' needs, resource availability, and health workers' responses, a SAINT is unlikely to have the same beneficial impact in

Table 3 Self-report from diabetic patients illustrating how a What Matters Index guides care and is an expedient proxy for what else might matter

	Sum of What Matter Index is			
	0	1	2	3
Number	2205	3197	2491	2327
WMI guidelines indicated				
Not health confident	NA	63	80	94
Bothersome pain	NA	8	32	75
Bothersome emotional problems	NA	3	14	47
Medications may be causing illness	NA	7	36	68
Poly-pharmacy (more than 5 medications/day)	NA	21	42	73
What else might matter	↓	↓	↓	↓
Examples of self-management engagement				
Has received good explanation for chronic condition(s)	82	68	56	43
Almost always checking and controlling blood sugar	68	56	50	42
Checks blood pressure regularly	70	59	54	46
Exercises at least three times a week	50	30	24	14
Usually eats healthy meals	76	63	53	34
Examples of major limitations, symptoms and concerns				
Poverty: does not often have money for everyday needs	12	20	33	49
Very limited social support	7	11	16	34
Very limited social activities	1	2	9	32
Very limited daily activities	1	4	10	41
Very limited physical capacity	5	11	14	29
Significant sleep limitations	7	17	28	51
Concern about violence and abuse	3	5	7	15
Examples of common reimbursable foci for clinical care				
Additional diagnoses				
Hypertension	53	62	71	79
Arthritis	20	28	41	62
Respiratory	12	15	22	37
Atherosclerosis	8	16	23	40
Risks				
BMI > 30 (obese)	45	54	62	71
Previous recalled systolic blood pressure > 150	18	20	26	35
Previous recalled blood sugar > 140 (7.8 I.U.)	23	33	39	49
Current smoker	10	12	18	30
Costly health care and care quality				
Recent emergency department or hospital use	13	19	28	49
Any of emergency or hospital uses possibly avoidable	17	31	44	56
Any healthcare-related harms during previous year	0.6	0.9	1.6	5.0
Continuous care from a doctor or nurse	88	86	83	80
Using a specialist	38	44	51	59
If using a generalist and a Specialist, one is in charge	89	85	81	72
Easy access	67	49	39	29
Receiving exactly the care needed	59	40	31	18

Numbers in the table body are a percentage of the respondents in each column

Wording and cutpoints for these patient-reported measures are available at https://howsyourhealth.org/html/adult_survey.pdf

all situations. Therefore, an effective SAINT must have a highly adaptable design to add or omit measures when they are needed for specific subgroups of patients or research protocols. This report has described how our SAINT was designed for adaptability, and available evidence suggests that it is likely to be cost-effective for improving health care

services and patient outcomes [10]. Our hypothesis is that the SAINT methodology and WMI described herein should be considered standards for comparison to other measures and methods.

In summary, with low and decreasing response rates to traditional survey techniques [52, 53], new tools and business models are needed to assess and deliver what matters to patients. Technologies that evolve to include the characteristics described here will deliver more effective and efficient tools for patients, providers, payers, and policymakers and give patients control over sharing their data with those who need it in real time. The WMI-based SAINT, www.HowsYourHealth.org, provides one broadly applicable and inexpensive strategy that reduces clinician guesswork regarding what matters to patients and facilitates resource planning to improve health care reliability. A medical maxim entreats us: "Listen to the patient; she is telling you the diagnosis." Here, we add: Listen to a few measures that really matter to most patients; those measures are telling you what to do.

Acknowledgements Past and present members of the Dartmouth, Northern New England Practice-Based Research Network and Ideal Microsystem Practices, Eugene Nelson, Mark Nunlist, Lynn Ho, Jean Antonucci, L. Gordon Moore, Dale Gephart, Deborah Johnson, Kimberly Nunlist, Lisa Wasson, and Lloyd Kvam.

Data availability Data from HowsYourHealth.org were used to illustrate how the principles described in this report can be applied to clinical practice and policy by documenting: (a) variation across hospital service areas (Fig. 2, $n = 73{,}338$), (b) the many problems reported by patients with diabetes (Table 3, $n = 10{,}220$), and (c) suggestions from patients with diabetes for increasing their health confidence (Fig. 3, $n = 603$). The data are available from the author upon email request (John.H.Wasson@dartmouth.edu). No personal patient identifiers are collected or stored by HowsYourHealth.org.

Compliance with ethical standards

Conflict of interest The author declares no conflicts of interest. Under license with the Trustees of Dartmouth College, the author develops and freely distributes HowsYourHealth.org and related websites for research and clinical practice. When academic or clinical users modify the material, the Trustees of Dartmouth College request that the source be attributed. Commercial users are required to obtain a license.

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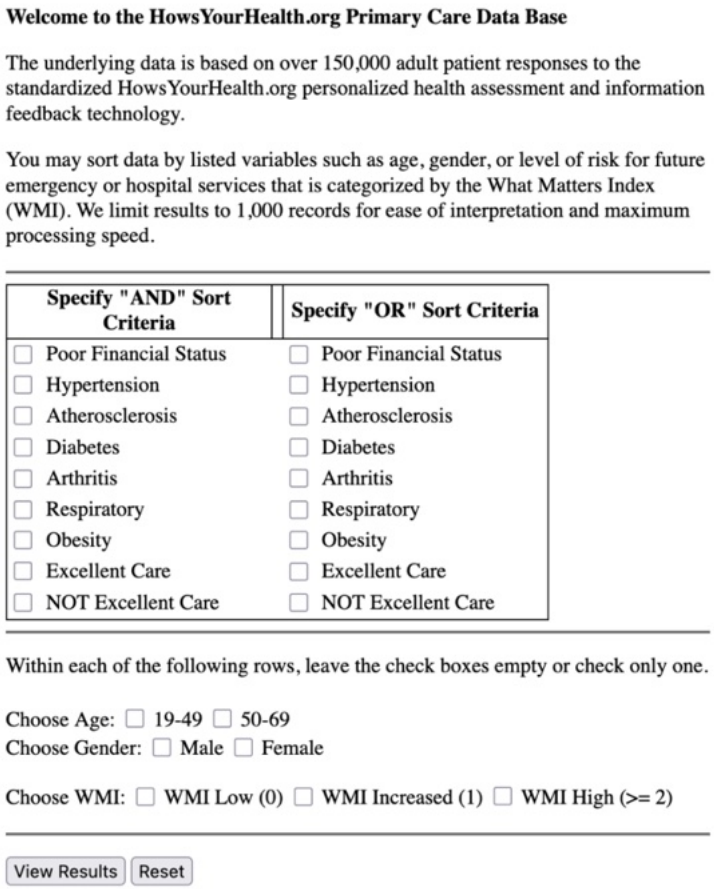
How to Use an Interpret the Interactive Data Base



Welcome to the HowsYourHealth.org Primary Care Data Base

The underlying data is based on over 150,000 adult patient responses to the standardized HowsYourHealth.org personalized health assessment and information feedback technology.

You may sort data by listed variables such as age, gender, or level of risk for future emergency or hospital services that is categorized by the What Matters Index (WMI). We limit results to 1,000 records for ease of interpretation and maximum processing speed.

Specify "AND" Sort Criteria	Specify "OR" Sort Criteria
☐ Poor Financial Status	☐ Poor Financial Status
☐ Hypertension	☐ Hypertension
☐ Atherosclerosis	☐ Atherosclerosis
☐ Diabetes	☐ Diabetes
☐ Arthritis	☐ Arthritis
☐ Respiratory	☐ Respiratory
☐ Obesity	☐ Obesity
☐ Excellent Care	☐ Excellent Care
☐ NOT Excellent Care	☐ NOT Excellent Care

Within each of the following rows, leave the check boxes empty or check only one.

Choose Age: ☐ 19-49 ☐ 50-69
Choose Gender: ☐ Male ☐ Female

Choose WMI: ☐ WMI Low (0) ☐ WMI Increased (1) ☐ WMI High (>= 2)

View Results Reset

1. The query allows you to extract 1000 adult patients' responses based on your "and" "or" combination. (We limit to 1000 responses from the data set of about 180,000 so the analysis is fast. Depending on the complexity of the data base inquiries, less than 1000 patient responses may be shown).

2. The items and scoring conventions are attached in the Next document.

3. All public reports automatically display relationships of patients' responses based on general demographics categories and common chronic conditions. Below is an example for patients who have diabetes. If you wanted to look more closely at 1000 women with diabetes who consider themselves to be obese, you would query again using "diabetes" and "female" and "obese".

4. In this way, the query allows a user to obtain a broad view of inter-related measures that can be impacted by interventions and, as shown in the presentation about GLP-1 weight loss medicines, garner an understanding about the impact of misleading selection biases.

5. Special inquiries should be addressed to John.H.Wasson@Dartmouth.edu

Public Summary Report

Summary for Individual Survey Items

Selected Since Beginning through Present (dxdiabetes = 1)

	All Records	Women	Men	Younger Women (19-49)	Older Women (50-69)	Younger Men (19-49)	Older Men (50-69)	Hypertension	Hardening of Arteries	Diabetes	Arthritis	Respiratory Disease	Obesity > 15%	Income Problems
Respondent Characteristics	1000	583	417	281	302	146	271	600	199	1000	322	204	463	304
Younger Women	28.10	48.20	zero	100.00	zero	zero	zero	23.50	17.09	28.10	22.67	35.78	33.05	36.84
Older Women	30.20	51.80	zero	zero	100.00	zero	zero	33.50	26.13	30.20	41.93	30.88	34.13	26.32
Younger Men	14.60	zero	35.01	zero	zero	100.00	zero	14.50	16.58	14.60	9.63	12.25	12.31	16.78
Older Men	27.10	zero	64.99	zero	zero	zero	100.00	28.50	40.20	27.10	25.78	21.08	20.52	20.07
Screenshot	**All Records**	**Women**	**Men**	**Younger Women (19-49)**	**Older Women (50-69)**	**Younger Men (19-49)**	**Older Men (50-69)**	**Hypertension**	**Hardening of Arteries**	**Diabetes**	**Arthritis**	**Respiratory Disease**	**Obesity > 15%**	**Income Problems**
Respondent Diagnoses	1000	583	417	281	302	146	271	600	199	1000	322	204	463	304
% with Hypertension	60.00	58.66	61.87	50.18	66.56	59.59	63.10	100.00	82.41	60.00	76.40	73.53	73.00	67.76
% with Hardening of Arteries	19.90	14.75	27.10	12.10	17.22	22.60	29.52	27.33	100.00	19.90	34.16	42.16	25.27	29.61
% with Diabetes	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% with Arthritis	32.20	35.68	27.34	25.98	44.70	21.23	30.63	41.00	55.28	32.20	100.00	54.90	44.71	39.14
% with Respiratory Disease	20.40	23.33	16.31	25.98	20.86	17.12	15.87	25.00	43.22	20.40	34.78	100.00	27.86	34.87
% with Obesity > 15%	46.30	53.34	36.45	54.45	52.32	39.04	35.06	56.33	58.79	46.30	64.29	63.24	100.00	53.29
% Income Problems	30.40	32.93	26.86	39.86	26.49	34.93	22.51	34.33	45.23	30.40	36.96	51.96	34.99	100.00
	All Records	**Women**	**Men**	**Younger Women (19-49)**	**Older Women (50-69)**	**Younger Men (19-49)**	**Older Men (50-69)**	**Hypertension**	**Hardening of Arteries**	**Diabetes**	**Arthritis**	**Respiratory Disease**	**Obesity > 15%**	**Income Problems**
Bothered (often or always) in the Past Month by:	1000	583	417	281	302	146	271	600	199	1000	322	204	463	304
% Limit Daily Activities	16.10	17.67	13.91	19.57	15.89	11.64	15.13	19.33	27.64	16.10	30.12	32.35	22.46	29.61
% Limit by Feelings	19.90	22.81	15.83	27.40	18.54	16.44	15.50	19.83	28.64	19.90	24.84	37.75	26.57	37.17
% Limit Social Activities	13.60	15.78	10.55	17.79	13.91	6.85	12.55	15.50	25.13	13.60	22.67	30.88	19.01	25.66
% Limit by Pain	27.70	31.90	21.82	33.10	30.79	18.49	23.62	32.33	42.21	27.70	48.45	47.06	37.58	41.12

THE QUESTIONS OF HOWSYOURHEALTH ADULT AND SCORING CONVENTIONS

* ARE USED IN THE CALCULATION SHOWN IN THE CUMULATIVE REPORTS
++ ARE USED IN THE WHAT MATTERS INDEX

Gender: Male Female
Age Groups: '18-34', '35-49', '50-64', '65-69'

DAILY ACTIVITIES (Q1)
During the past 4 weeks how much difficulty have you had doing your usual activities or tasks, both inside and outside the house because of your physical and emotional health?
No difficulty at all A little bit of difficulty Some difficulty Much difficulty* Could not do*

> DAILY ACTIVITIES (Q1A) You answered that you had greater than average difficulty doing your usual activities or tasks. Is your doctor or nurse aware of the problem?
> Yes No
> DAILY ACTIVITIES (Q1B)
> You answered that you had greater than average difficulty doing your usual activities or tasks. How would you rate your doctor's or nurse's explanation of the problem(s)?
> Excellent* Very good* Good Fair Poor
> DAILY ACTIVITIES (Q1C) You answered that you had greater than average difficulty doing your usual activities or tasks. Treatment has made these problems:
> No treatment has been given to me for these problems Much better* A little better*
> No different
> A little worse
> Much worse

FEELINGS (Q2)
During the past 4 weeks, how much have you been bothered by emotional problems such as feeling anxious, depressed, irritable, sad or downhearted and blue?
Not at all Slightly Moderately Quite a bit* Extremely*

> FEELINGS (Q2A)
> You answered that you have been bothered by more than average emotional problems. Is your doctor or nurse aware of the problem?
> Yes No
> FEELINGS (Q2A) You answered that you have been bothered by more than average emotional problems. How would you rate your doctor's or nurse's explanation of the problem(s)?
> Excellent* Very good* Good Fair Poor

FEELINGS (Q2C) You answered that you have been bothered by more than average emotional problems. Treatment has made these problems:
No treatment has been given to me for these problems Much better* A little better* No different A little worse Much worse

SOCIAL ACTIVITIES (Q3)
During the past 4 weeks, has your physical and emotional health limited your social activities with family friends, neighbors or groups?
Not at all Slightly Moderately Quite a bit* Extremely*

SOCIAL ACTIVITIES (Q3A) You answered that your social activities have been limited more than average. Is your doctor or nurse aware of the problem?
Yes
No
SOCIAL ACTIVITIES (Q3B) You answered that your social activities have been limited more than average. How would you rate your doctor's or nurse's explanation of the problem(s)?
Excellent* Very good* Good Fair Poor
SOCIAL ACTIVITIES (Q3C) You answered that your social activities have been limited more than average. Treatment has made these problems:
No treatment has been given to me for these problems
Much better* A little better* No different A little worse Much worse

PAIN (Q4)
During the past 4 weeks, how much bodily pain have you generally had?
No pain Very mild pain Mild pain Moderate pain*++ Severe pain*++

PAIN (Q4A)
You answered that you had greater than average bodily pain. Is your doctor or nurse aware of the problem?
Yes No
PAIN (Q4B)
You answered that you had greater than average bodily pain. How would you rate your doctor's or nurse's explanation of the problem(s)?
Excellent* Very good* Good Fair Poor
PAIN (Q4C) You answered that you had greater than average bodily pain. Treatment has made these problems:
No treatment has been given to me for these problems Much better* A little better* No different A little worse Much worse

SOCIAL SUPPORT (Q5)
During the past 4 weeks, was someone available to help you if you needed and wanted help? For example, if you: felt very nervous, lonely or blue; got sick and had to stay in bed; needed someone to talk to; needed help with daily chores; or needed help just taking care of yourself
Yes, as much as I wanted Yes, quite a bit Yes, some Yes, a little* No, not at all*

SOCIAL SUPPORT (Q5A)
You answered that you had very little or no social support. Is your doctor or nurse aware of the problem?
Yes No
SOCIAL SUPPORT (Q5B) You answered that you had very little or no social support. How would you rate your doctor's explanation of the problem(s)?
Excellent* Very good* Good Fair Poor
SOCIAL SUPPORT (Q5C) You answered that you had very little or no social support. Treatment has made these problems:
No treatment has been given to me for these problems Much better* A little better* No different A little worse Much worse

PHYSICAL FITNESS (Q6)
During the past 4 weeks, what was the hardest physical activity you could do for at least 2 minutes
Very heavy Heavy Moderate Light* Very light*

PHYSICAL FITNESS (Q6A)
You answered that you had greater than average difficulty doing physical activities. Is your doctor or nurse aware of the problem?
Yes No
PHYSICAL FITNESS (Q6B)
You answered that you had greater than average difficulty doing physical activities. How would you rate your doctor's or nurse's explanation of the problem(s)?
Excellent* Very good* Good Fair Poor
PHYSICAL FITNESS (Q6C) You answered that you had greater than average difficulty doing physical activities.
Treatment has made these problems: No treatment has been given to me for these problems Much better* A little better* No different A little worse Much worse

How often during the PAST FOUR WEEKS have you been **bothered** by any of the following problems?
Never Seldom Sometimes Often* Always*

Trouble urinating or wetting (Q7) Headache (Q7-1) Stomach or abdominal pains (Q7-2) Dizzy spells, tiredness or fatigue (Q7-3) Chest pains (Q7-4) Eating or weight problems (Q7-6) Skin problems (Q7-7) Trouble urinating (Q7-8) Sexual problems (Q7-9) Asthma or breathing problems (Q7-10) Joint pains (Q7-11) Backaches (Q7-12) Trouble sleeping (Q7-13) Foot trouble (Q7-14) If Female - Menstrual or menopausal problems (Q7-5) Dizzy when standing up, trouble eating well, teeth or denture problems

Do you have any **concerns** about: (Please mark all that apply)*

Violence or abuse (Q8-1) Sexual issues or birth control (Q8-2) AIDS and other sexually transmitted diseases (Q8-3) How to make the health care system work better for you (Q8-4) Substance abuse (beer, wine, drugs) (Q8-5)

Exercise and nutrition needs (Q8-6) Preventing injuries or accidents (Q8-7) Preventing cancer and heart disease (Q8-8) Ear, eye or mouth care (Q8-9)

Has a doctor told you that you have any of these **problems**: (Please mark all that apply)

High blood pressure (Q9-1) Heart trouble or hardening of the arteries (Q9-2) (Sugar) Diabetes (Q9-3) Arthritis (Q9-4) Asthma, bronchitis or emphysema (Q9-5) Serious obesity (more than 15% overweight) (Q9-6)

You checked that you have high blood pressure, heart trouble, diabetes, or breathing problems.

In the past year have you been in the **hospital or visited an emergency room** because of any of these problems? (Q9A)
Yes* No

In general, how would you rate the **information** given to you about these problem(s) by your doctor or a nurse? (Q9B)
Excellent* Very Good* Good Fair Poor I do not remember receiving any information

In general, how much have any of the doctors or nurses **helped** you live with these problems? (Q9C)
A lot* Some A little Not much I have not needed any help

Do you think that any of your **pills are making you sick**? (Q9D)
Yes*++ No Maybe, I am not sure*++ I am not taking any pills

What is your **weight** in pounds (kilograms)? (5 BMI)

less than 100 (45)
100-120 (46-55)
121-140 (56-64)
141-160 (65-73)
161-180 (74-82)
181-200 (83-91)
201-220 (92-100)
221-240 (101-109)
240 or more (>110)

What is your **height** in inches (within 2 inches)? (5 BMI)

Feet: Inches:

Have your **parents, brothers or sisters had any of these problems** before they were 65 years of age: (Please mark all that apply)
Heart trouble or hardening of the arteries (Q10-1) (Sugar) Diabetes (Q10-2) Cancer (Q10-3) High fat (cholesterol) in the blood (Q10-4) Any other family disease (Q10-5)
Are you a **smoker?** (Q11)

No Yes, and I might quit* Yes, but I'm not ready to quit*

Do you have **enough money** to buy the things that you need to live everyday such as food, clothing, or housing? (Q12) Yes, always Sometimes* No*

How many different **prescription medications** are you currently taking more than three days a week? (Q13)
None 1-2, 3-5* More than 5*++

HEALTHY EATING
How often do you eat food that is healthy (such as fresh fruits, fish and vegetables) instead of unhealthy food (such as fried foods, sweets and "junk food")?
In the last week my evening meals were: Always Healthy Meals* Most of the time Healthy Meals* Some of the time Healthy Meals A little of the time Healthy Meals'Almost never Healthy Meals

Do you **exercise** for about 20 minutes 3 or more days a week? (Q Exercise)
*Yes, most of the time Yes, some of the time No, I usually do not exercise this much.

SEAT BELT
Do you fasten your seat belt when you are in a car?
Yes, almost always* Yes, sometimes No

HEALTH HABITS (Q15)
During the PAST 4 WEEKS, how many drinks of wine, beer or other alcoholic beverages did you have?
10 or more per week* 6-9 per week 2-5 per week 1 drink or less per week

HEALTH HABITS (Q16) During the PAST 2 YEARS, how often have you been told that you should cut back drinking alcohol?
Never Once or twice* More than once or twice*

HEALTH HABIT CHANGE (Depending on previous responses)
If you are interested in making a change in a risk to your health during the next two months, please check the one most important to you at this time.
I wish to quit smoking I wish to lose weight I wish to cut back on drinking alcohol I wish to exercise more regularly I wish to have better health habits such as eating right or avoiding accident risks I do not wish to make any change in a risk to my health at this time

HEALTH HABIT CONFIDENCE IN CHANGE (Depending on previous choice)
You checked that during the next two months you….(filled in by choice)
How confident are you that in two months you will be successful
Very confident* Somewhat confident Not very confident
Prevention Female All Ages: In the past TWO YEARS have you

(Q18A) Had a pap test for cervical cancer? Yes* No I am not sure

Female all Ages :RELATIONSHIPS (Q19)
During the past 4 weeks, how often have problems in your household led to:
Insulting or swearing? Threatening? Yelling? Hitting or pushing?
None of the time A little of the time Some of the time* Most of the time*
All of the time*

Prevention Female 50+: In the past TWO YEARS have yo
A mammogram for breast cancer? (Q21A)
Yes* No I am not sure
A test for fat (cholesterol) in the blood? (Q21B)
Yes* No I am not sure
A test for cancer of the bowel? (Q21C)
Yes* No No, but I had a colonoscopy in the past 9 yea

Prevention questions omitted since 2020

Prevention Female Under 50: Have you had GOOD EDUCATI
Birth control? (Q22A) Yes* No I am not sure
Avoiding sexual diseases? (Q22B) Yes* No I am not usre
The advantages and disadvantages of mammography and cholesterol
young women? (Q22C) Yes* No I am not sure

Prevention questions omitted since 2020

Prevention Male 50+: In the past TWO YEARS have you had:
A test for fat (cholesterol) in the blood? (Q24A)
Yes* No I am not sure
A test for cancer of the bowel? (Q24B) Yes* No Yes No No, but I had a colonos
the past 9 years.
Good education about the advantages and disadvantages of a blood te
cancer? (Q24C) Yes* No I am not sure

Prevention questions omitted since 2020

Prevention Male Under 50: In the past TWO YEARS have you had: A
(cholesterol) in the blood? (Q25A)
Yes* No I am not sure

You indicated earlier that you have breathing problems.
How would you **rate the information** your doctor or a nurse gave you about:
Excellent* Very Good* Good Fair Poor I do not remember receiving any information

How to **adjust medicines** for your shortness of breath?(Q Breathing 1A)
How to **use inhaled** medicines? (Q Breathing 1B)

Do you use an **inhaled steroid**? (Q Breathing 2)
Yes* No Not sure

You indicated earlier that you have diabetes.

How often do you keep your **blood sugar (glucose) in normal range** (between 80 and 150)? (Q Diabetes 1)
I do not test my blood sugar *All of the time *Often Sometimes Rarely Never

How would **you rate the information** your doctor or a nurse gave you about: *Excellent *Very Good Good Fair Poor I do not remember receiving any information

Having your **eyes checked**? (Q Diabetes 2A)
How to **check feet** and choose proper shoes? (Q Diabetes 2B)
How to **adjust medicines for diabetes** and recognize when to call a doctor or nurse for help? (Q Diabetes 2C)

If your **blood sugar level before eating** was checked in the past four weeks, what was it? (Q Diabetes 3) Less than 100 101-120 121-140 141-160 161-180 181-200 201-250 Over 250

You indicated earlier that you have high blood pressure

How would you rate the **blood pressure information** your doctor or nurse has given you? *Excellent *Very Good
Good Fair Poor I do not remember receiving any information

What to do if you **miss a dose** of your medicine? (Q HBP 1A)
The effect of **weight and salt** on our blood pressure? (Q HBP 1B)
The **problems blood pressure medications** might cause you? (Q HBP 1C)

Do you **check your own blood pressure**? (Q HBP 2)
*Yes, often Yes, sometimes Almost never Never

What was your last blood pressure? (Q HBP 3A)
High Number (systolic) Under 100 100-120 121-130 131-140 141-150 151-160 161-170 Over 171 I don't know
Low Number (diastolic) (Q HBP 3B)
Less than 60 60-70 71-80 81-90 91-100 101-110 Over 110 I don't know

[For Hypertension, Diabetes, and Heart Disease]

What was your **last total cholesterol level**? (Q Heart 0)
Less than 100 101-130 131-160 161-180 181-200 201-220 221-240 Over 240 I don't know

You indicated earlier that you have heart trouble.

Have you ever had a **heart attack**? (Q Heart 1A)
Yes No

If you answered yes, are you taking aspirin and a "beta blocker" such as propanolol (Inderal), or other "beta blocker" drugs that end with a 'lol'? (Q Heart 1B) Yes* No I am not sure

Have you had a **stroke, paralysis or "shock"?** (Q Heart 2A)
Yes No

In the last month, have you **used nitroglycerin for chest pain**, tightness or angina? (Q Heart 3A)
Yes No

If you answered yes, how satisfied are you that everything is being done for your chest pain, tightness or angina? (Q Heart 3B)
*Completely satisfied *Mostly satisfied Somewhat satisfied Mostly dissatisfied Not satisfied at all

Have you been told that you have **heart failure**? (Q Heart 4A)
Yes No

If you answered yes, how would you rate the information your doctor or a nurse gave you about
*Excellent *Very Good Good Fair Poor I do not remember receiving any information

The effect of **weight and salt** on your heart failure? (Q Heart 4B)
How to **adjust medicines** for your weight, shortness of breath and leg swelling? (Q Heart 4C)

Describe here any **medical errors (mistakes)** that you or your family have experienced. Errors include such things as mixed up medications or poor treatment that result in harm or additional problems. If possible, be sure to tell us the cause of the error and how it might have been avoided. Your response will help us to improve future care delivery.

If you wrote in an error or harm, please help us by choosing ANY of the following categories for this error. (Please mark all that apply) *ALL MUST BE PRESENT TO BE CODED A HARM
*It caused harm, hurt or injury (Q Open 1) *It happenend within the last year (Q Open 2) *It happened to me (Q Open 3)

How **confident** are you that you can control and manage most of your health problems? (Q Control)
*Very confident Somewhat confident++ Not very confident++ I do not have any health problems.

What would it take to increase your health confidence so that you could say that you are "very confident" you can control and manage most of your health problems during the next 2 months? (Open ended)

MEDICAL HOME PROCESSES

When you visit your doctor's office, how often is it well organized, **efficient,** and does not waste your time? (Q Efficient)
*Most of the time Some of the time Almost never is it efficient. It often wastes my time. Does not apply to me. I seldom visit a doctor's office.

During the PAST TWO WEEKS, how much did physical health or emotional problems **keep you from working** the hours you needed to work?
(Q Present) Physical or emotional problems DID NOT LIMIT my ability to work at all. *Physical or emotional problems DID LIMIT my ability to work a small amount (about 10 to 20%)
*Physical or emotional problems DID LIMIT my ability to work a large amount (more than 20%)

In the PAST 3 MONTHS did you have an **illness or injury** that kept you in bed for all or most of the day? (Q26)
Yes* No

In the PAST YEAR did you **stay in a hospital** overnight or longer? (Q27)
Yes* No

Do you have one person you think of as your **personal doctor or nurse**? (Q28)
Yes* No

Are you now also seeing a **specialist physician**?
Yes No I am not sure

If you are seeing a specialist physician and your primary physician do you have **one doctor who you feel is in charge** of your medical care?
Yes* No I am not sure

Overall, are there things about the **medical care from your specialist physician (or physicians)** that could be better?
No, the specialist(s) care is perfect* Yes, some things Yes, lots of thing

Are there things about your **medical care** that could be better? (Q29)
No, my care is perfect* Yes, some things Yes, a lot of things

How **easy is it for you to get medical care** when you need it? (Q30)
Very Easy* Easy Somewhat Difficult Very Difficult I have not needed medical care

When you think about your health care, how much do you agree or disagree with this statement:

I **receive exactly what I want and need** exactly when and how I want and need it.
Strongly Agree* Somewhat Agree Somewhat Disagree Strongly Disagree

You checked that you **have used the hospital or the emergency department in the past 12 months**. If this is true,

How many different times have you used the hospital or emergency department?
'1 time'2-4 times 5 or more times I have not used the hospital or emergency department in the past 12 months

Do you think that there was something you or a doctor **could have done to avoid** the hospital admission or visit to the emergency department?
Yes, I am sure that if I had received better medical care or information I might have avoided time in the hospital or emergency department Maybe, if I had received better medical care or information I might have avoided time in the hospital or emergency department No, I can think of nothing a doctor or I could have done to avoid it. My time in the hospital or emergency department was necessary*

ADDITIONS BASED ON AGE 65-69: Quality of Live, Overall Health, Falls in year, Fear of falls, Driving difficulties, Home hazard info, Keep track of med info, Taking meds as prescribed. Refer to the geriatric survey for wording.

OPTIONS: CAHPs (Can be activated completely or randomly to reduce response burden for patients. The template used is includes items 6-23 and 41-43 from 2016 PQRS that are comparable to the 2018 [illegible] many remaining PQRS items that focus on decisio[illegible]d surgical treatments and discussion of r[illegible]ote recall and are more directly a[illegible]lth. We have chosen three of these PQR[illegible]est follow-up information, ii) medi[illegible], and iii) sharing of personal health information.

CAHPS and ROS never used by practices and are not included in reports

OPTION: REVIEW OF SYSTEMS (Must be activated… Adds length to assessment but documents for billing purposes)

<u>Purpose of Doctor appointment</u>
Please complete the following:
Is your main purpose in coming to the office for a NEW concern or problem or a KNOWN (older) concern or problem?
NEW concern or problem
KNOWN (OLDER) concern or problem