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# Responding to AI Disruptions in Search (Health)

A WHITE PAPER

ROUNDTABLE MEETING INITIATED BY [JULIA WALSH BSC.](#)  
A ROADMAP FOR ADAPTING TO CHANGE, PREPARED IN  
COLLABORATION WITH INDUSTRY THOUGHT LEADERS



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*“With over a billion health-related queries entered into Google around the world every day, Dr. Google is a profoundly influential virtual member of the multi-disciplinary team across all stages of the patient journey.*

*The transformation of the digital information experience into a conversational chat-based exchange is poised to deepen this relationship, with potential for a significant influence on the broader healthcare ecosystem where opinions formed online drive real-world behaviour.”*

Julia Walsh, Search Listening Analyst

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## Executive summary

This white paper provides an analysis of the impact artificial intelligence (AI) is having on the way questions are exchanged for health advice online. It presents a detailed summary of current dynamics of the digital information landscape in healthcare and presents a roadmap for responding to the disruptions as AI-generated 'conversations' replace traditional search. It is anticipated that verbal exchanges of questions for health advice will be quickly adopted across healthcare stakeholders next, and we will see relationships with 'Dr. Google' deepen and expand to include AI-chat tools such as 'Dr. ChatGPT' and 'Dr Bard'.

As the implications will be broad, and possibly too big for one organisation to grapple on its own within the timeframe of change, a group of senior healthcare executives engaged in this cross-industry collaboration to define the scope of this disruption and explore the opportunities and challenges it presents. Their goal was to generate a guide to digital change management that includes recommendations for healthcare organisations internally, and industry as a whole where there may be broader legislative and ethical considerations. While this round table was held in Sydney, with a focus on the Australian context, the insights generated have global relevance.

This white paper is the outcome of that collaboration and presents an overview of:

- Current dynamics of the digital disconnect in search particularly where, due to regulatory restrictions, the pharmaceutical industry has little to no voice when healthcare stakeholders seek online advice about prescription therapies which inadvertently leads searchers to misinformation
- Key challenges and opportunities presented by the AI-led disruption where chat-based conversational narratives replace the menu of ranked websites offered by traditional search,
- Strategies for adapting to this changing landscape with recommendations of specific critical success factors for groups of stakeholders from Medical Affairs to Information Technology
- Considerations for an ethical framework to guide our response

Based on research undertaken by search listening specialists at Brand Medicine International, there is a genuine urgency to understand and influence the new digital information experience to ensure patients and healthcare professionals are receiving locally relevant, evidence-based answers when they engage chat tools for health advice. While the practical strategies proposed in this paper hinge on the importance of multi-stakeholder collaboration where a coordinated effort between patient groups, industry stakeholders, government and search engines is required to overcome challenges and capitalise on the opportunities, the authors also encourage decentralised digital activism to 'clean up the internet for patients'. To ensure the delivery of high-quality health advice online in this new and unfamiliar landscape many small efforts have potential to collectively drive a significant shift away from misinformation and reduce 'hallucinations' associated with AI-chat.

In conclusion, the authors recommend a proactive approach to adapt to the new landscape by embracing a genuinely patient centric strategy, investing in data infrastructure, building partnerships with technology vendors, and addressing ethical concerns related to bias and transparency. They emphasise that a successful communications evolution will require a culture shift towards innovation and experimentation where there is permission to fail. Crucially, stakeholders must stay agile and responsive to change to maintain relevance in the rapidly evolving digital landscape.

'*Responding to AI Disruptions in Search (Health)*' is a valuable resource for healthcare stakeholders at all levels to understand the challenges and opportunities presented by AI disruptions in search and to inspire and guide them to lead the digital transformation of their teams in response. The goal is to accelerate their adaptation by offering this context and advice as a robust starting point.

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**For consulting services to respond to this disruption of the digital information experience in healthcare, contact [julia@brandmedicine.com.au](mailto:julia@brandmedicine.com.au) to learn more.**

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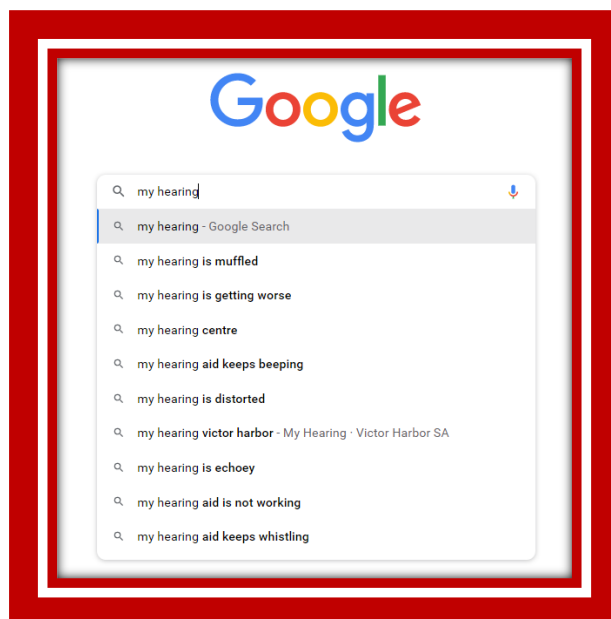
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## Background

**Search engines are the modern hearth around which information is exchanged. Listening to, and understanding, the digital landscape in terms of search dynamics is essential to understand this influence on decision-making across the healthcare ecosystem. Recent changes have catalysed a profound transformation in the way questions are exchanged for health advice online, particularly the launch of ChatGPT, integration of chat-based interactions into New Bing, and Google's launch of its AI chatbot, Bard.**

People turn to search engines to ask *more than six billion* questions every single day; of these, *more than one billion* are estimated to be health related. For patients, search engines are available at their fingertips and around the clock. Search engines do not judge, and they offer a wealth of information that can empower someone concerned about a symptom, covering in the face of a diagnosis, or navigating an arduous treatment regime. 'Dr. Google' is a virtual member of almost every patient's multidisciplinary team – and this relationship is poised to deepen with AI chat interfaces.

When seeking advice, people do not turn to the internet and type in a URL; they pose a question in their natural language – precisely what AI chat tools are designed to respond to, in very humanlike ways. The rollout of these tools is poised to transform the digital information experience.

On 30 March 2023, 18 senior health industry executives met in Sydney to extrapolate the potential implications of this evolution of the digital landscape and draft a roadmap for industry to leverage as a starting point in their adaptation to this disruption. The group included cross-functional representatives from the pharmaceutical industry across prescription medicines (Rx) and over-the-counter medicines (OTC), as well as special contributors Stefan Harrer, Chief Innovation Officer of the Australian Digital Health Co-operative Research Centre (CRC); and Friska Wirya, a global change management thought leader in digital transformation.

The roundtable discussion consolidated strong insights about what is happening, what the potential is, what to watch out for, and what we need to do. This white paper discusses the research that informed our discussion and the insights generated during this collaboration.

## Introduction

### The digital disconnect in search

Outside the US, the pharmaceutical industry has little to no voice when healthcare stakeholders seek online advice about prescription medicines. Around the world, national advertising regulations for medicines were created on the assumption that healthcare consumers and patients did not have sufficient knowledge to correctly understand and act upon the information that would be communicated about those products – as well as, of course, to protect them from inappropriate promotion of restricted therapeutic agents. This has consistently been the case since the internet became widely available over 30 years ago. The restrictions imposed by this regulatory framework do not acknowledge the scale of search activity about medications occurring online. They also fail to address the reality of the current digital information experience influencing both patients and HCPs.

One of the top medications on the Pharmaceutical Benefits Scheme (PBS) in Australia has *over a million* questions about it recorded by Google every year<sup>3</sup> – with the most prominent content returned to stakeholders being third-party websites such as WebMD and drugs.com<sup>4</sup> – the latter where **unverified individual patient reviews drive the narrative on a medication, not clinical data**. While US branded websites are often presented to local stakeholders in other markets such as Australia and offer answers to prescribers and patients, this can have implications as well by offering incorrect details on indication, price etc.

The regulatory restrictions are designed to protect patients from direct advertising promotion; however, they inadvertently concurrently construct a situation where Australian patients miss out on getting relevant and accurate information. It is critical to consider the value of a regulatory context that facilitates the delivery of patient-responsive content that accurately answers specific questions patients ask when they seek to understand how to take and use their medications.



The current dynamic inadvertently creates a vacuum where misinformation is amplified, because search engine ranking elevates the prominence of unverified sources of information about prescription medications due to the absence of industry-owned assets with an online presence.

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<sup>3</sup> Answer the Public and Semrush combined volume for all keyword variants stemming from 'Eliquis'; July 2023.

<sup>4</sup> Share of SERPs analysis conducted by Brand Medicine International. For the seed term (in each case the brand name), additional key words (for example, why, how, versus) were included in a set of search queries to populate Google's autocomplete data from which all autocomplete queries were extracted, resulting in a full set of unique search queries. SERP proxies were then used to scrape the SERP data across the full set of extracted queries (with the location set to Australia, language set to English, SERP (page) 1 only, and 10 results per SERP). Lastly, the publishing website was isolated from the landing page and frequency counts and proportions were calculated for each website. Note: Google's autocomplete algorithm provides searches that reflect common and trending queries that are affected by location, language and time. The top 40 publishers were assessed as a percentage of the results for the set of search queries. The total number of unique online publishers (websites) was also extracted from the total results (across all search queries).



Content consumed online informs the opinions of healthcare stakeholders, from patients to prescribing healthcare professionals (HCPs) – **because doctors google too**. These opinions, in turn, drive behaviour. When the sheer scale of this activity is taken into account, it is imperative to acknowledge the impact this must be having on the broader healthcare ecosystem, from quality use of medicines to patient safety and public health outcomes. Among other issues, it is likely the current digital information experience online in relation to medicines exacerbates the cost of public health, due to:

- the prominence of information published by people without health credentials, leading to misuse of medications, and
- primary non-adherence driven by negative reviews about life-saving treatments that deter initiation.

Correspondingly, there will also be commercial implications for the healthcare industry whereby all efforts to implement robust medical education on a disease and inform prescribing stakeholders via sales representatives on how to initiate and manage patients on a therapy are undone by individual reviews or advice delivered on channels that are not sufficiently regulated, such as YouTube and Reddit. They also see sensationalised ‘news’ (local or foreign) not grounded in clinical evidence.

### AI compounds the issues

To add to this digital disconnect, we are currently bearing witness to a profound transformation in the way information is exchanged online. Stakeholders, from patients to HCPs, have always had a tendency to start their search with a question, asked in their own natural language; they do not habitually enter a specific URL. So, with the arrival of AI-driven, chat-based search platforms, the responses to questions for health advice have now evolved from a menu of ranked websites into a concise answer presented in a conversational style that is highly engaging to the searcher.

These responses flow from question to question across a topic in a seamless digital information experience that is frequently infused with statements of empathy for patient concerns. This is likely to deepen their relationship with digital sources of health advice moving forward, and it is possible that patients will be spending more time with ‘Doctor GPT’ and ‘Doctor Bing’ in future than they will with their primary healthcare givers.

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*“We anthropomorphize because we do not want to be alone. Now we have powerful technologies, which appear to be finely calibrated to exploit this core human desire ... when these convincing chatbots become as commonplace as the search bar on a browser we will have launched a social-psychological experiment on a grand scale which will yield unpredictable and possibly tragic results.”*

L.M. Sacasas<sup>5</sup>

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ChatGPT reached 100 million users just two months after launching, with Microsoft rapidly integrating it into Bing and quickly attracting people across to this search engine from Google.<sup>6</sup> Shortly after, on 21 March 2023, Google announced the launch of its AI chat-based search interface, Bard.

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<sup>5</sup> [The Prompt Box is a Minefield: AI Chatbots and Power of Language’ \(substack.com\), The Convivial Society: Vol. 4, No. 2, 17 February 2023.](#)

<sup>6</sup> [Microsoft Bing hits 100 million active users in bid to grab share from Google - The Verge](#)

With the race between the major search engines driven by AI, we are now navigating an entirely new digital landscape with diminished visibility of the digital information experience from the end-user point of view. Dynamics are further complicated by little accountability over content given that some of these tools do not even offer the sources used for their answers, and for those that do, an alarming number of those references cannot be verified. In our experiment designed to assess the performance of models GPT-3.5, GPT-4, and Bard in generating a review article on cancer research, GPT-4 delivered the most comprehensive and well-organized response, ***although half of its citations were invalid***. GPT-3.5 crafted a logically structured response but inadequately addressed challenges in cancer research and provided more invalid sources. Bard fell short by offering a less detailed overview and failing to meet the citation requirements, with all provided references being invalid (refer to the Appendix for the full details of this research).

The issue is these tools are trained on the visible web – the content with high current domain authority that sits in front of fire- and pay-walls – and then compound complications with hallucinations and invalid sources.

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*With respect to AI chatbot responses “we are unable to draw a straight line from the answers given back to the sources used”*

Stefan Harrer, Chief Innovation Officer, Digital Health CRC

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Does this mean that AI is seizing control of the narrative over therapeutic entities?

- How can government and industry ensure that evidence-based, locally relevant sources are being used to guide the advice given to patients and HCPs when they type questions about medicines into these new AI-driven, chat-based search tools?

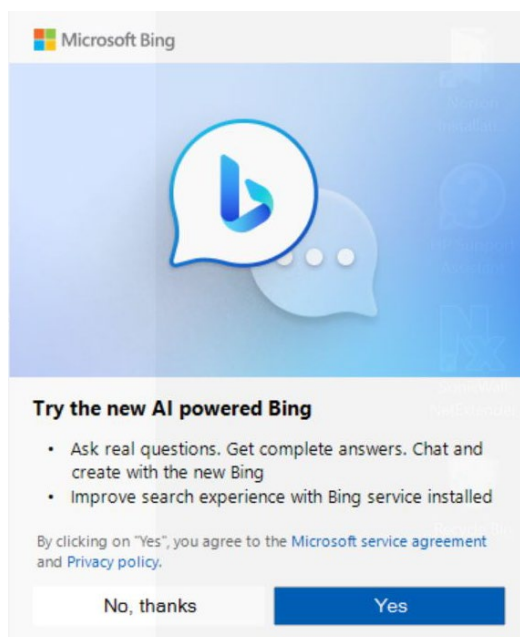
To a certain degree, health outcomes are a function of health literacy and digital literacy, with the ability to discern the quality of online health advice playing a significant role in shaping the patient journey. To enhance public health outcomes, proactive engagement with stakeholders across the digital ecosystem is crucial to create a positive online experience that swiftly guides patients from initial symptoms to accurate diagnoses, and on to effective treatments.

The double exponential change fuelled by the convergence of AI disciplines and the acquired ability of AI to self-direct its own learning will further accelerate the transition from traditional searches to AI-driven, chat-based exchanges drawn from content currently visible to these entities on the web.

There are already advances to improve the health-related digital information experience. [Med-PaLM 2](#), developed by Google, has been recorded as accurately answering medical questions and achieving an "expert" level performance on USMLE-style queries with 86.5% accuracy. This AI system facilitates understanding of complex medical texts, serving as a transformative tool in advancing channels for healthcare advice while maintaining robust safeguards for users.

## Digital transformation: Guiding a response

So, how do we face this challenge when the rapidly evolving digital landscape makes it nearly impossible to accurately describe the context?



*As illustrated here, search engines are actively converting people from traditional search to chat-based interfaces.*

*This transition is now unstoppable – Search Engine Optimisation (traditional SEO) is likely to diminish in relevance as Search Chat Optimisation is poised to become the holy grail of digital customer engagement.*

To start, we must **accept it is happening**. Search has changed forever and will not revert; this applies to all subject areas; however, the potential implications for personal health may be greater.

Next, we must **tackle it** as one would prepare for a marathon: we train (learn), and then lean into the challenge to adapt to this new digital landscape by continuing to put one foot firmly in front of the other.

In the first instance, we need to demonstrate to lawmakers that it is more urgent than ever that the companies responsible for these medications need a seat at the table. Legislation has failed to ensure the delivery of locally relevant, evidence-based health advice within traditional search, so regulatory reform needs to leap ahead to protect searchers from the influence of mis- or disinformation in AI-driven, chat-based search platforms.

While product information (PI) and consumer medicines information (CMI) are technically available online, there is no SEO investment so the sites they are posted on are eclipsed by other sites that hold high domain authority. For this reason, regulatory reform must immediately permit sponsors of medications to openly publish customer-responsive content online (for both patient and HCP stakeholders) that accurately answers key queries in a locally relevant context. This will offer evidence-based content for AI chat tools to scrape from the internet to inform their answers.

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*“Our overall goal is to ‘clean up the internet’ for patients and doctors – to ensure that locally relevant, evidence-based advice, informed by approved labels and backed by clinical data, is what turns up online when people ask search engines about their medications, and to diminish the influence of misinformation.”*

Julia Walsh, Search Listening Specialist

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For this roundtable discussion we agreed to lay down some principles and not get too caught up in the current state of play. We identified two main objectives for this paper:

1. Describe the scope and urgency of the issue.
2. Suggest pathways to respond to this digital disruption that can be applied internally to empower individual organisations, and broadly to support the therapeutics industry, including prescription and non-prescription medicines.

Together, we need to mobilise to accelerate a response that empowers us to have a voice to represent the therapeutic assets we are responsible for – and inspire a new regulatory framework that puts patient needs at the heart of the digital information experience.

The following is a roadmap to help us achieve this. It highlights key challenges and opportunities, as well as critical success factors and ethical considerations for all stakeholders to consider.

## Real-world search activity and the websites driving the narrative

We start by addressing the elephant in the room: it is time to acknowledge the *scale of search activity* in relation to all medicines, including prescription medications. An estimated 8/10 people seek advice online when they are prescribed a medication.<sup>7</sup> This table represents search activity in Australia as measured in June/July 2022 for five of the largest brands reimbursed on the Pharmaceutical Benefits Scheme (PBS), and illustrates the scale of search activity occurring. Despite all the other channels available to stakeholders to obtain information about these medications, they still ‘google it’:

Medication searched	Approximate PBS cost (excluding rebates)	Searches/month*	Extrapolated to searches/year*
Eylea/aflibercept	\$392,045,570	~6,000	>72,000
Keytruda/ pembrolizumab	\$342,875,272	~17,500	>210,000
Opdivo/nivolumab	\$344,751,398	~13,500	>162,000
Prolia/Xgeva/ denosumab	\$244,407,111	~71,500	>858,000
Eliquis/apixaban	\$210,022,698	~87,500	>1,050,000

\* Google search data only (does not include Bing activity), so the data above represents about 90% of total activity.

The second (crucial) part of the equation is *where do these questions lead searchers?*

- What is the *actual content* that comprises the Page 1 Search Engine Results Pages (SERPs)?
  - ~90–95% of people will ask their question a different way vs navigate to page 2.
- What is the quality of the websites, and who are the digital opinion leaders delivering the answers to these questions that stakeholders *are relying on to guide their decisions?*

Dr Lillian Rigoli, Director of Analytics and Innovation at Brand Medicine International, designed a *Share of SERPs* analysis<sup>8</sup>, which was undertaken to measure real-world digital share-of-voice across all these brands in Australia. This analysis quantitatively identified and ranked the websites returned to all questions (aggregated) on each brand and revealed the content that is driving real-world narrative on these medications and influencing decision-making. The following graphs represent the Share of SERPs analysis for each entity (for brand name-based queries) and breaks out the presence of locally relevant resources versus content published overseas among the top 40 results.

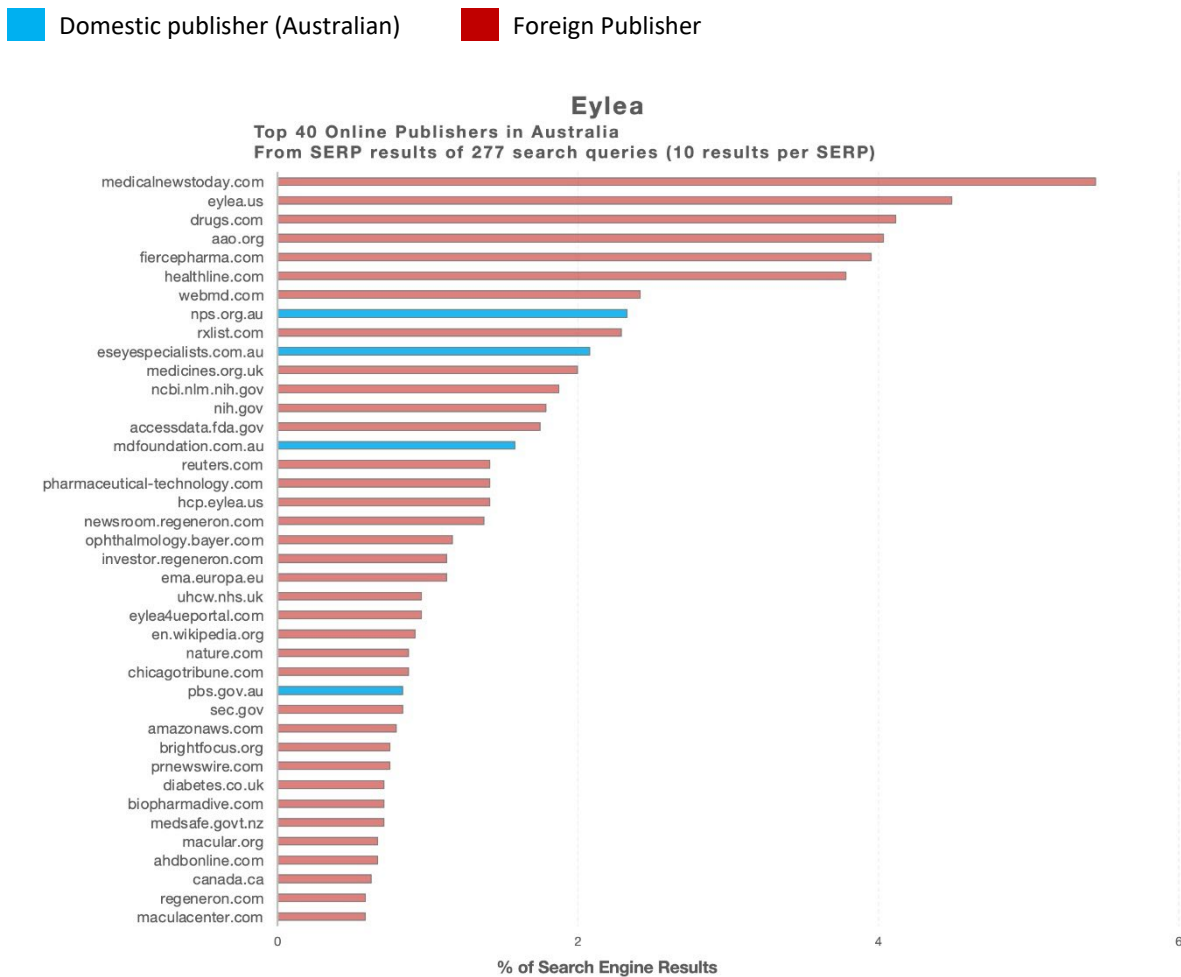
For those interested in a summary of the key takeaways from the following analysis, essentially this proves the current digital information experience in search is not providing accurate, relevant information. This quantitative assessment reveals:

- country-specific issues (for example the dominance of foreign content)
- quality-of-information issues (the prominence of unverified third-party websites)

<sup>7</sup> Survey conducted by Brand Medicine International, December 2020–January 2021. Responses to ‘*When do you look up health-related information?*’ where 79.49% of respondents selected ‘*When I am prescribed a medicine (to understand what it is, how to take it and side effects)*’.

<sup>8</sup> **Methodology (Share of SERPs analysis)** For each seed term, additional key words (for example, why, how, versus) were included in a set of search queries to populate Google’s autocomplete data from which all autocomplete queries were extracted, measuring the total number of unique search queries. SERP proxies were then used to scrape the organic SERP data across the full set of extracted queries (with the location set to Australia, language set to English, SERP (page) 1 only, and 10 results per SERP). Lastly, the publishing website was isolated from the landing page and frequency counts and proportions were calculated for each website. Google’s autocomplete algorithm reflects common/trending queries affected by location, language and time.

**Figure 1. Share of SERPs ‘Eylea’**



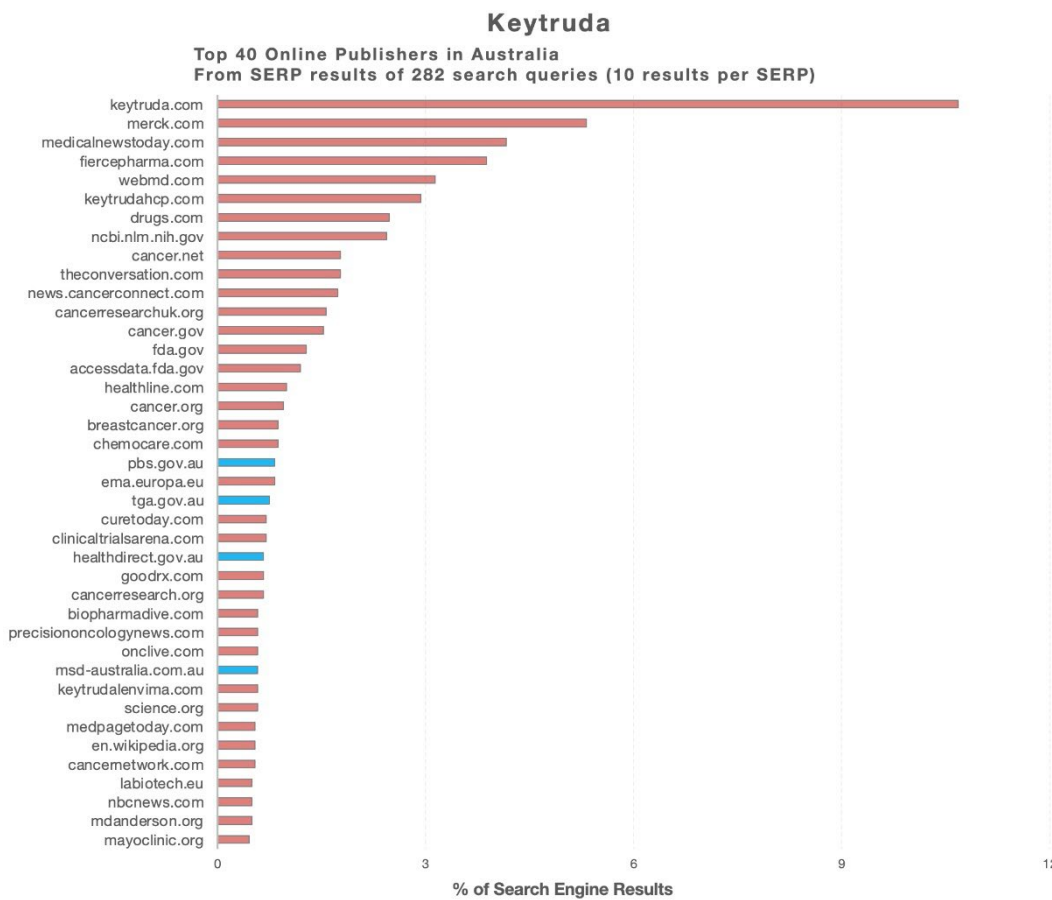
These top 40 publishers made up 66.67% of the results returned across 277 distinct search queries; domestic publishers made up 6.82% of the total results returned across all websites. Bayer Australia is not represented in the top 40.

What is evident is the dominance of overseas content, driven by the lack of local content. The critical importance of the National Prescribing Service (NPS) MedicineWise website<sup>9</sup> is also evident; however, at the time of writing, this was last updated in November 2021, nearly a year and a half ago, and as questions about medications evolve constantly, there is no calibration of content to real-world needs, only the presentation of the approved CMI and PI – and often in PDF format, which is not mobile-friendly to read. This is a critical issue for the Australian Government; its online published sources of ‘official’ information seem to be of limited visibility, usability and relevance. The dominance of content from US sites and content published by other regulatory authorities should thus be of great concern.

<sup>9</sup> NPS website asset has been taken over by the Australian Commission on Safety and Quality in Health Care; it’s unknown as to the future plans for investment and maintenance of this resource to ensure it meets the needs of the Australian healthcare stakeholders seeking advice on prescription medications.

**Figure 2. Share of SERPs ‘Keytruda’**

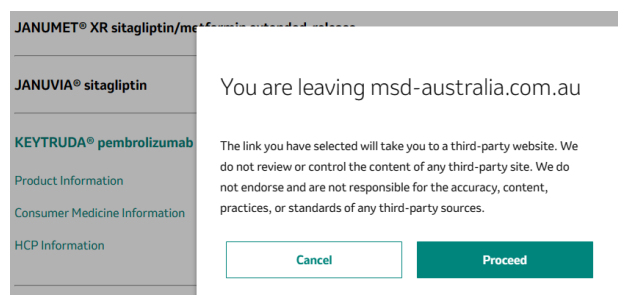
■ Domestic publisher (Australian) ■ Foreign Publisher



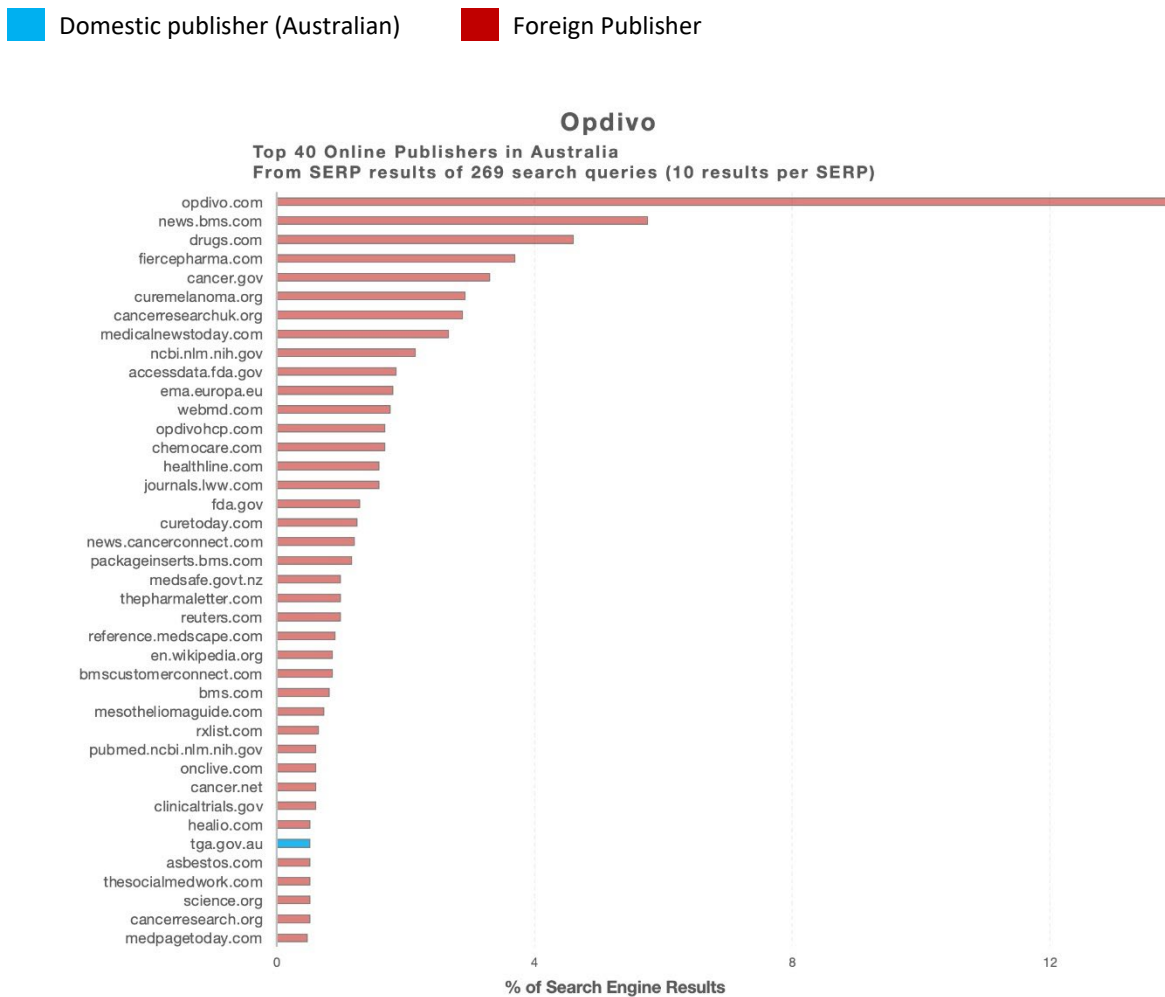
These top 40 publishers made up 62.28% of the results returned across 282 distinct search queries; domestic publishers made up 2.80% of the total results.

This is the view from the Australian perspective and the US branded website dominates the online experience, followed by the Merck corporate website. With regulatory restrictions blocking the Australian entity from having a voice directly to stakeholders online, they are being actively diverted to this overseas content. Of the three Australian websites turning up, MSD-Australia is one of them; what is important to consider is the mindset and needs of the person asking the question – it will be very specific, and generally the need is to get an answer quickly. Going to this website requires a number of clicks (i.e. user persistence) to find Keytruda.

When this is clicked on, they are diverted to official sites offering the Australian PI and CMI where they have to wade through these documents to seek an answer to their question. This poor digital information experience is typical and is a result of regulatory restrictions and a focus by companies on other channels of communication that exclude search.



**Figure 3. Share of SERPs ‘Opdivo’**



These top 40 publishers made up 72.42% of the results returned across 295 distinct search queries; domestic publishers made up 0.52% of the total results.

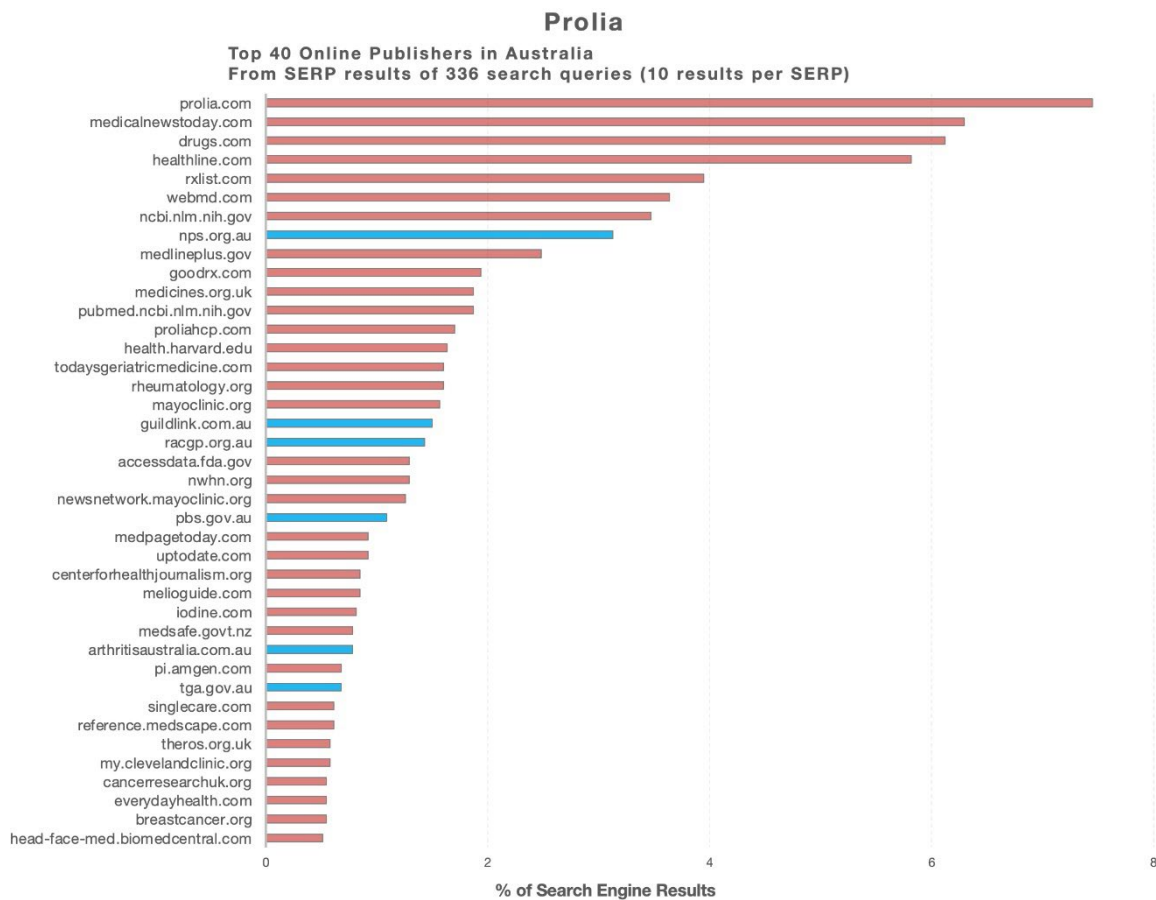
In Australia, of the many thousands of questions asked every year for the prescription therapy Opdivo in Australia, nearly three-quarters of the content provided to Australian stakeholders is represented by only 40 websites. Of these, only one is Australian – the Therapeutic Goods Administration (TGA) website – appearing with a very low relative prominence in 35<sup>th</sup> place. Considering this site offers searchers a [35-page PDF](#) as opposed to a direct answer to their specific question, this local content does not offer the efficient digital information experience expected by stakeholders seeking advice on this medication. This is compounded if they are using a phone to search as lack of readability further diminishes the user experience. **A 35-page PDF is of no use to a patient versus customised ‘byte’-sized responses to specific individual queries.**<sup>10</sup> This is a massive obstacle for improving digital health literacy (that is, finding quality information and then using it appropriately).

<sup>10</sup> It’s possible that generative AI will level the playing field between PDF vs web content, however it is yet to be seen in specific examples like this digital information experience for Opdivo.



**Figure 4. Share of SERPs ‘Prolia’**

■ Domestic publisher (Australian) ■ Foreign Publisher



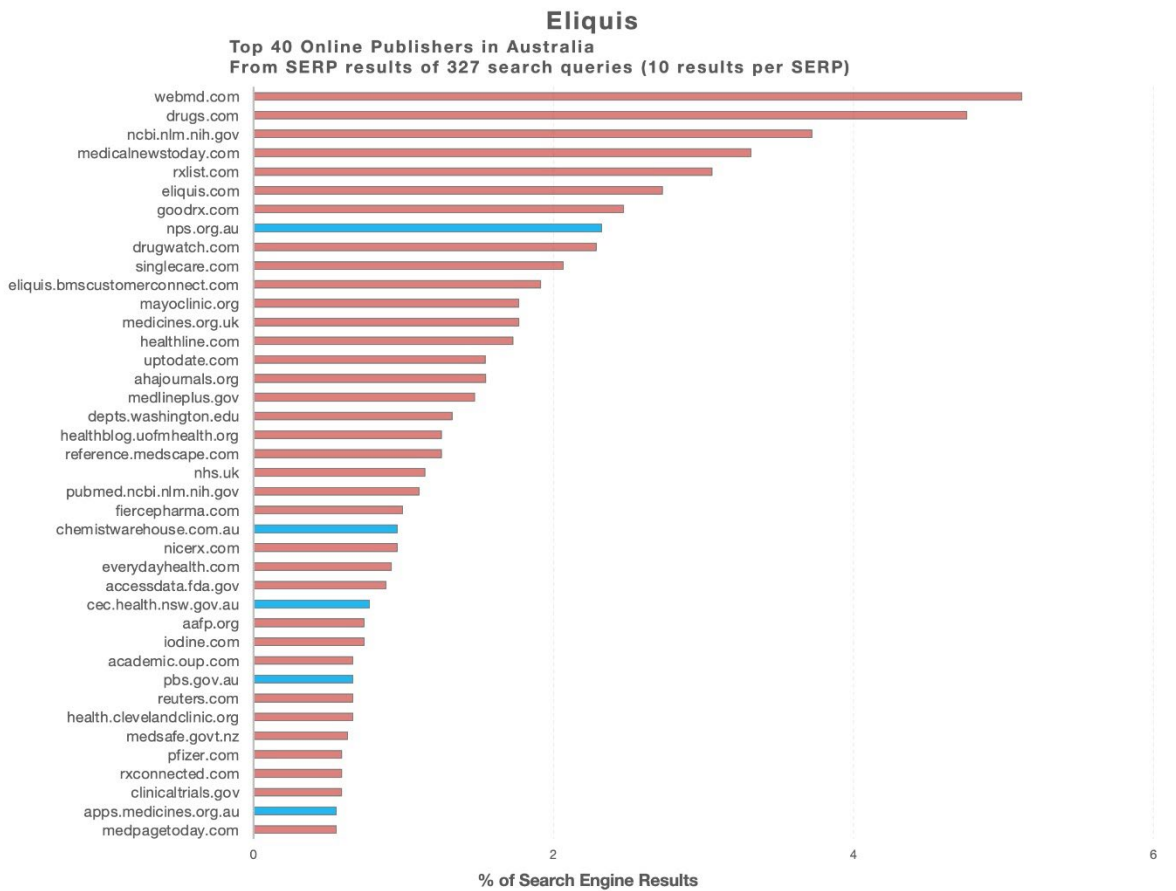
These top 40 publishers made up 75.76% of the results returned across 336 distinct search queries; domestic publishers made up 8.60% of the total results.

Amgen Australia has no presence in the top 40 websites offering stakeholders no pathway to connect back to the company to receive answers to their questions about use of this therapy. RACGP is quite prominent, with this website generally offering articles authored by GPs for other GPs to read. This is not an ideal source of answers to specific questions. Furthermore, many of the ‘Prolia’-based questions are generated by patients (e.g ‘Prolia what does it do to the body?’) while HCPs use denosumab as the basis for many of their queries (‘denosumab MOA’). These two questions are seeking the same information, just from the perspective of a different stakeholder as reflected in the language used. With only technical information being offered in these top websites, it’s easy to see why Australian patients gravitate towards, and ultimately rely upon, advice about their medications from websites with more relatable content like US-based drugs.com (ranking third in this analysis).

This is why understanding the real-world digital information experience from the searchers’ perspective is critical in healthcare to guide practical decision making around regulatory frameworks and digital strategy.

**Figure 5. Share of SERPs ‘Eliquis’**

■ Domestic publisher (Australian)
 ■ Foreign Publisher



These top 40 publishers made up 62.79% of the results returned across 327 distinct search queries; domestic publishers made up 5.27% of the total results.

*“This snapshot reveals that the PBS is investing over \$1.5 billion in treatments, while their use is being guided by Google search with content predominately drawn from overseas labels and contributors with little to no health credentials (such as unverified patients on drugs.com). Meanwhile, the companies responsible for these medications are not permitted to deliver information online directly to decision makers and end users.”*

Julia Walsh, Search Listening Specialist

Based on the above Share of SERPs analyses, we can see that for AI chat tools designed to inform answers from the content most visible to them on the internet, there is potential for the significant digital disconnect from quality, locally-relevant, evidence-based content to be further amplified as searchers adopt new chat-based interfaces.

## Challenges and opportunities presented by the roll-out of AI in Search

It is not all bad news, though. While this shifting digital landscape presents many challenges in health care, it also offers a raft of opportunities. In our roundtable we sought to identify and prioritise the top challenges and opportunities for the following groups of key stakeholders:

1. Patients
2. HCPs
3. Industry
4. Government

By working together to address these challenges and leverage the opportunities, the healthcare industry can maximise the potential benefits of AI healthcare advisers, enhancing patient care.

### Patients

#### Challenges

##### *Entrenched behaviour that seeks digital health advice*

For years, patients have been comfortable to consult Dr. Google with their health queries and this is evidenced by the search data.<sup>11</sup> There is no evidence this habitual consultation of the internet for everything from initial diagnosis to second opinions and advice on medications will abate. Search activity offers a digital reflection of our lives from the moment we wake up until the minute we go to bed. Information from directions to pet grooming recommendations and everything else in between is trusted, and this reliance on guidance from search engines encompasses advice about our health. Patients have confidence in the information delivered and this can be amplified by the heightened emotional state they are often in when seeking advice on a health issue.<sup>12</sup> This has the potential to hinder the ability to objectively evaluate the accuracy and reliability of the information found.

##### *'Hallucinations' contaminate health advice*

Misinformation present in traditional search will be concentrated by AI and delivered in conversational chat bot responses to healthcare queries. The integrity of health advice in these channels will be exacerbated by the propensity of chat bots to entirely make things up (aka 'hallucinations'<sup>13</sup>) when other sources on the visible web fail to offer what AI tools measure as suitable content. This adds risk to the influence of content delivered in this new format.

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*"ChatGPT-like tools can spit out plausible but incorrect information, a process euphemistically dubbed 'hallucination'. That may not be a problem when dreaming up promotional material but it is a fatal flaw elsewhere."*

Joseph Schumpeter, 'Meet the New Co-pilot', *The Economist*, 22 April 2023

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<sup>11</sup> A [CNN analysis](#) of a 2018 Google Trends reported health is one of the most popular subjects searched by internet users; as many as one in 15 Google searches is health related (an estimated 7% of Google's daily searches, 70,000 searches/minute) Google Health Vice President David Feinberg, MD ([The Telegraph](#)).

<sup>12</sup> Walsh, J [What We Really Ask Dr. Google](#) Chapter 3: Understanding the whole patient behind the search queries; The Patient Journey and the Stages of Grief.

<sup>13</sup> [Hallucination \(artificial intelligence\) - Wikipedia](#)

*State of mind increases risk*

Patients are often vulnerable when seeking health advice. Patients become vulnerable because they rarely know where to find reliable advice. This vulnerability is compounded by a number of factors:

- Varying levels of health literacy, which affect a patient's understanding of medical terms and concepts.
- Varying levels of digital literacy influencing a patient's ability to navigate and use online resources and understand what to trust:
  - For example, an Australian patient thinking Medicare is synonymous with the PBS may ask 'Does Medicare cover [insert name of medication]?' and is then directed to the US-based Medicare website. It is easy to not realise they have 'travelled overseas' and none of the information is relevant to their local situation.
- Their ability (or inability) to take appropriate action based on the information received.
- Difficulty in distinguishing credible information from misinformation or disinformation.

Further complicating the issue is the now well-established trust in the authority of search engines, for example, 'Dr. Google'. This blind faith in search is poised to grow as patients' search behaviour shifts to AI chat platforms. The personalised and conversational nature of AI chat mimics a relationship that in turn engenders additional dimensions of trust.

## Opportunities

*Empowerment over their health*

The ability to obtain health advice at their fingertips that consolidates all the known information about an illness offers patients unprecedented control over their patient journey. These chat tools facilitate delivery of easy-to-understand advice, empowering them to be informed at all points in their journey, giving them more control over the decisions made and actions taken by their HCPs.

*Put patients at the heart of patient education and customise the chat experience*

When we undertake a search listening analysis and truly understand the type of content patients are searching for, we can meet their expectations and manage their information experience by providing tailored, relevant information through personalised offline and online channels (Medical Information page or Patient Familiarisation and Support Programs (PFP or PSPs)). When we provide relevant content in an effective format that takes into account varying levels of health and digital literacy, we empower patients and build trust.

Channel choice can influence how information is curated. Chatbots, for example, can help. We can also design custom chatbots to manage the digital information experience by exclusively using approved, locally relevant, evidence-based content. Recognising that patients will use these tools regardless of warnings against doing so, we can find ways to intercept their digital information experience to offer precise responses. By providing a similar conversational experience, we can preserve the integrity of information delivery in relation to prescription medication.

*Integrate the digital into the analogue HCP consultation*

A significant opportunity lies in leveraging patients' existing search behaviour and augmenting it with expert advice. Patients already habitually consult the internet and will quickly adopt AI tools for health advice (regardless of advice against it). To steer the digital conversation towards the evidence

base, HCPs could establish hybrid consultations between HCPs and digital/AI tools. By harnessing the vast knowledge accessible through these tools during a consultation, there is potential to expedite the patient journey by reinforcing the HCP's perspective with the wealth of online knowledge available in the specific area. This approach enables HCPs to be present *during the interaction*, identifying quality information from misinformation in real time before the patient has the chance to be affected by any false information, or worse – act upon it.

Positioning HCPs as arbiters and gatekeepers of credible health advice can foster greater trust in the patient–HCP relationship. This open acknowledgement of the benefits of jointly seeking advice and knowledge can be appreciated by patients, as it validates their inclination to use these tools and creates a more supportive environment. By harnessing this wealth of knowledge, we can augment clinical consultations to accelerate patients' progress from symptoms to diagnosis and ultimately guide them to the appropriate treatment and resolution of their health issues.

There will be resource/capacity obstacles to this as HCPs are trained up to an adequate level to engage effectively with patients/healthcare consumers in any AI-assisted interaction. We would also need to address the two-way flow of information – how is patient input collected and potentially acted upon by AI tools?

Over the longer term, there is also an increasing potential role for 'health coaching and treatment' by AI tools. This goes beyond simple searching for information; rather, it becomes searching for and connecting with a suitable form of AI/digital therapeutic intervention.

#### *Increase health equity*

Additional opportunities involve promoting greater equity in access to information. AI chatbots in their current form do not censor information or exhibit bias based on factors such as a patient's skin colour, age, sexuality or socioeconomic status.

By increasing access to health advice and lowering the cost of seeking it, AI can potentially enhance health equity. This premise, however, is contingent on the assumption that the advice provided will be of high quality – an aspect we must understand and manage as AI chat tools increasingly become a dominant source of health information for patients.

Health literacy is likely to play a crucial role in obtaining accurate responses from these AI tools, as phrasing questions appropriately can make all the difference to the answers offered. Merely asking an AI tool a question in the same manner as one would enter it into a search engine may not yield a quality response. Interestingly, due to the nature of AI tools scraping data from the visible internet, they remove human biases in health advice delivery; however, they also introduce search engine biases.

Another notable benefit of these tools is their ability to overcome language barriers in consultations with HCPs. As AI tools like large language models (LLMs) can now interact in multiple languages, they may provide a means to achieve clearer communication and understanding in multilingual consultations.

#### Healthcare professionals

As the digital landscape continues to evolve, chat-based AI healthcare advisers present both challenges and opportunities for HCPs. It is important to understand the former, to overcome them and embrace the latter. We explored both aspects in relation to chat-driven search and potential strategies to address them and enhance the HCP–patient relationship.

## Challenges

### *Misinformation and mistrust*

The lack of direct online presence for prescription medications can lead to a vacuum where misinformation thrives, requiring HCPs and patients to navigate fragmented and unreliable information. Without a voice, the most prominent content will dominate the answers offered by AI chat search tools.

*A good analogy of the digital disconnect is visually represented by this example prompt followed by an AI-interpreted response:*

One significant challenge HCPs face is the difficulty of finding up-to-date, fair, balanced and locally relevant information – and that is poised to continue with Wikipedia and drugs.com dominating the sources used to inform AI-curated answers. Additionally, the sheer volume of information available and the borderless nature of advice can make it challenging for HCPs to identify relevant data for their immediate and specific needs.

While HCPs may come to rely on AI-driven advice, they will initially be unfamiliar with how to work with tools like ChatGPT effectively. They need to understand the importance of knowing how to ask the right questions and ensure that responses are underpinned by verified clinical evidence.

HCPs are unprepared to discuss AI-generated advice with their patients during consultations, so this is going to continue to create friction in the patient/doctor dialogue, which has potential to drive patients to keep to themselves health advice they found online that they are following. Another challenge is that use of LLMs could lead to a degradation of trust in HCPs (patients second-guessing HCPs and unrelentingly ‘testing’ them).

In conclusion, the rollout of chat-based AI healthcare advisers presents several challenges for HCPs, including finding reliable and relevant information, adapting to new tools, and managing the evolving HCP/patient relationship. Chat-based AI might also attract the newer (younger) generation of doctors and inspire accelerated adoption of integrated consultations among this segment of HCPs. For older HCPs, the amount and pace of effective training will be a critical constraint.

### *Accuracy*

Another key challenge during the rollout of chat-based AI healthcare advisers is guaranteeing the accuracy and reliability of the health-related information they provide. This white paper highlights the importance of addressing this issue and offers strategies to ensure that AI-generated content meets high standards of quality and evidence-based practice.



1. **Acceptable error rates:** In health care, a 5% error rate is unacceptable. AI healthcare advisers must maintain significantly lower error rates to ensure the information provided is accurate and does not jeopardise patient safety or decision-making.
2. **Evidence-based information:** To maintain accuracy and reliability, AI healthcare advisers should be trained using clinical evidence from reputable sources, such as peer-reviewed journals and authoritative medical organisations. This ensures the provided information aligns with established scientific consensus and best practices in health care. It is relevant to patients as much as for healthcare consumers who are focused on preventative care.
3. **Support for early-stage patients:** Ensuring accurate information is particularly critical for patients in the early stages of a disease, as they may lack a baseline understanding of their condition and are particularly vulnerable. AI healthcare advisers should prioritise delivering accurate, easy-to-understand information to help these patients navigate their health journey with confidence.
4. **Trustworthy and accessible content:** AI-generated content should be trustworthy, accessible, and synthesised in a manner that patients can easily comprehend. Ensuring compliance with relevant regulations and guidelines is crucial for maintaining trust and promoting accurate information dissemination.

## Opportunities

HCPs should be encouraged to find ways to harness the potential impact of AI healthcare advisers on the HCP–patient relationship. Patients are likely to develop trust in AI-generated advice due to its personalised and conversational nature. Potentially, integrating these tools into daily practice could improve HCP–patient relationships and provide a broader perspective on symptoms and disease aetiology. Tapping into the immense knowledge available to AI chat tools could increase a patient’s journey from symptoms to treatment and resolution by accelerating the diagnosis stage and optimising treatment pathways.

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*“Eric Boyd, head of AI for Microsoft’s cloud-computing division, describes the potential increased efficiency offer by AI tools as ‘like working in dog years’.”*

Joseph Schumpeter, ‘Meet the New Co-pilot’, *The Economist*, 22 April 2023

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HCPs should accept all support offered – for example, by industry or government – to navigate the changing digital landscape and ensure patients continue to balance their advice with information from HCPs rather than relying solely on digital sources. It is crucial to address potential issues, such as consumers challenging HCP-provided advice and the potential impact on consumers’ willingness to pay for professional advice.

By embracing and integrating AI technologies, healthcare providers can better address patient needs, improve collaboration and actively contribute to refining digital healthcare experiences. Some key opportunities include:

1. **Hybrid consultations:** One opportunity involves integrating AI search tools into hybrid consultations<sup>14</sup> that combine traditional face-to-face appointments with digital information and

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<sup>14</sup>In an article published in the *New England Journal of Medicine*, [Benefits, Limits, and Risks of GPT-4 as an AI Chatbot for Medicine](#) the authors discussed the benefits, limits and risks of using GPT-4 in medical practice.

- resources. By leveraging AI-generated content, HCPs can enhance patient understanding, promote informed decision-making, and efficiently tailor care plans according to individual needs.
2. Digital antibodies against misinformation: HCPs can also play a crucial role in refining AI-generated content by acting as ‘digital antibodies’ against misinformation. When AI tools provide incorrect or misleading health advice, practitioners can report and correct these inaccuracies, ensuring that future outputs are more accurate and reliable. This initiative could be supported by organisations such as the AMA, to ensure widespread participation and sustained improvement.
  3. Collaborative workshops: Another opportunity lies in organising workshops that bring together HCPs with expertise in specific conditions. These workshops can focus on exploring and recalibrating the search landscape for a particular health topic. Participants can collaborate to identify misinformation, suggest improvements and develop strategies for enhancing AI-generated content in their areas of expertise.
  4. Advocating for reform: Failure of the regulatory environment to adequately address the real-world digital information experience impacts HCPs in their day-to-day work with patients. They have an opportunity to help ‘clean up the internet’ for patients (and themselves) by supporting appropriate regulatory reform to permit the publication of content that answers the questions asked online about prescription medications. In this way, AI search will have multiple evidence-based sources available to generate their answers from.

There are benefits beyond search too – AI tools could be leveraged to reduce the burden of healthcare-related administrative tasks. This would allow HCPs to invest more time in face-to-face interactions with their patients.

## Industry

Our round table agreed it is imperative for all key sector bodies – Medicines Australia, Consumer Healthcare Products (CHP) Australia, Complementary Medicine Association (CMA), Medical Technology Association of Australia (MTAA), etc. – to proactively design a practical and cost-effective response to this disruption of the digital landscape. Given the scale of activity and the implications of a poor digital information experience on quality use of medicines, patient outcomes, asset (brand) reputation and commercial returns, putting our heads in the sand and staying out of the fray is not an option. Our approach needs to be a compromise between Silicon Valley (*‘Move fast and break things’*) and Pill Hill<sup>15</sup> (*‘This is how we have always done things’*). The time is now to adapt our communication strategy across promotion, education and instruction to this inevitable disruption that has already arrived and is here to stay.

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*“Businesses will distinguish themselves by how well they use AI.”*

Bill Gates, [‘The Age of AI Has Begun’](#), Gates Notes blog, 21 March 2023

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They analysed the safety and usefulness of GPT-3.5 and GPT-4 by examining their responses to clinical questions that arose during patient care. Preliminary results reveal that the models provide generally safe responses 91–93% of the time. They agreed with known answers 21–41% of the time, illustrating there is a need to improve; however, there may still be a role to play in consultations with real-time collaborative review of answers with patients.

<sup>15</sup> Colloquial expression used in Australia to collectively refer to establish pharma industry players.



## Challenges

As AI-based search becomes more widely adopted, the healthcare and pharmaceutical industries must address issues related to compliance, data management, preparedness and accessibility.

1. **Preparedness and agility:** The healthcare industry is often slow to adapt to new technologies, and many organisations are unprepared for the impact of AI on the digital landscape. Staying agile and responsive to change will be critical to maintaining relevance and addressing challenges posed by the implementation of AI healthcare advisers.
2. **Internal challenges:** Organisations face a range of internal challenges, such as allocating for, and availability of, suitably qualified resources to respond to this change. Furthermore, failure will naturally be a large component of growth, therefore creating a culture of forgiveness around this will be imperative to inspiring teams to lean into the challenge of maintaining control of the narrative over therapeutic assets in their market.
3. **Regulatory hurdles:** Externally there are restrictions on industry having a voice by the existing regulatory framework, tying our hands from directly answering questions while Wikipedia steps in and guides the content offered by chat search. There is no specific industry-wide working group driving collaboration on the reform needed, yet the problems posed by the new digital landscape are going to require a unified voice and critical mass to be overcome.

These challenges are compounded by inherent risk aversion – especially for multinationals who will want to ensure oversight of any local experimentation. In the meantime, companies must find a way to balance providing accurate and up-to-date information without breaching confidentiality or regulatory restrictions.

## Opportunities

### *Being agents of change*

Accepting the reality of AI's role in healthcare and initiating discussions around its impact offers the healthcare industry a leadership opportunity to be the change we need to see. Drawing on lessons from the healthcare industry's response to COVID-19, where the patient was placed at the heart of strategic initiatives, we can advocate for all stakeholders, from legislators to HCP groups, to focus on delivering locally relevant, evidence-based answers that will benefit the healthcare ecosystem.

Embracing a patient-centric, industry-wide approach rather than a company- or brand-centric perspective provides the chance to improve digital healthcare literacy rapidly in collaboration with other stakeholders. By working together, companies can contribute to more effective healthcare outcomes and better patient experiences. This may involve revising engagement rules and allowing the pharmaceutical industry to communicate directly with patients, particularly during the early stages of an illness being treated with their medication.

Industry-wide collaboration is the key to successfully addressing the challenges posed by AI-driven digital transformation. Establishing a 'Digital Health Literacy & Communications Advisory Board' that includes pharmaceutical companies, patient advocacy groups, and other regulatory and government stakeholders can help maintain focus and momentum. This representative body, which ideally also includes representatives from generative AI providers such as Microsoft and Google, could start by issuing a position statement on AI tools and continually reviewing and responding to the evolving

landscape. Collaboration with existing patient-engagement advisory groups can further facilitate rapid progress in addressing the challenges and opportunities presented by AI-based tools.

In this scenario of working together to manage the new flow of influence from AI-based conversations, if we attain our goal of delivering locally relevant, evidence-based answers to questions about prescription products, a rising tide will lift all boats and benefit stakeholders across the healthcare ecosystem.

#### *Supporting HCPs to respond to this disruption*

Collaborating with HCPs will also be essential. Industry-sponsored education initiatives can help HCPs navigate the new digital information landscape and understand the implications of AI tools in their practice, and support appropriate adoption of these tools.

Sponsorship of an educational campaign for HCP waiting rooms and telehealth apps that can inform patients about appropriate use of AI chat tools for health advice can save time for doctors, who will likely engage in this conversation with patients on a regular basis.

#### *Replicating the chat-based digital information experience with specific, approved content*

Retooling existing educational resources to be AI friendly. This offers a benefit to patients if industry can design their own resources to provide accurate information in a way patients can understand and interact with. This offers an opportunity to personalise information, which patients are likely to gravitate towards in the new search landscape.

#### *Search banking*

Search banking, the practice of capturing currently available longform queries about entities, will offer a strong reflection of the questions being entered into chat tools instead. Also, correlating key questions with volume (or for HCPs where volume is typically lower, questions with strategic relevance) and using these to map the digital information experience in the chat tools to understand the answers offered, identifying sources used will reveal insights into what is influencing stakeholders. This also offers opportunities to provide feedback (where necessary) so AI tools can craft more appropriate responses to ensure future users are receiving the right advice.

#### *Providing alternative, synthesised information*

Support the investment in channels that are more trustworthy and updated regularly. Consider domain-specific chatbots (for example, BioGPT, but trained on locally relevant medical information like the PIs for all approved Rx products in Australia). Being able to control the quality of information these tools draw responses from will ensure patients are accessing accurate, safe and relevant information.

#### *Establishing guardrails*

Adopting an AI 'code of conduct', potentially in partnership with international organisations or other responsible AI communities (for example, explore International Standards, Standards Australia, Responsible AI Community). This could help ensure ethical and reliable AI implementations for the dissemination of information. A certification system that verifies content meeting specific standards could also be introduced to foster trust in AI-generated information.

Industry could work with legislators or directly with search engines to:

- create a ‘tick’ that verifies content that meets certain standards or criteria
- require the inclusion of links to local PI, local PBS reimbursement status and local CMI whenever answers are offered to queries about prescription medications in Australia (or within any other market, for that matter).

*Implementing workstreams with permission to ‘fail forward’*

In the face of change, what happens if we put all our eggs in one basket to pursue ‘Search Chat Optimisation’ in a landscape that is constantly shifting as it finds its feet and we fail to meet outcomes? Risk mitigation in responding to this disruption may be best addressed by establishing different workstreams for healthcare communications (this may also be reflected by appointing some smaller markets as ‘test markets’ for the response). Consider splitting internal teams in to one ‘business-as-usual’ team and another ‘AI-directed communications pilot’. This pilot, ‘Skunk Works’-style approach, with a second team that comprises ‘Frustrated Enthusiasts’ and ‘Digital Change-Makers’, would be empowered to trial new solutions to engage customers, and given permission to fail with an understanding that this is new territory that members of the team are unlikely to have any tertiary training to understand.

#### **Pharma executive digital archetypes**

**“Type #1 Nostalgia Seekers:** They are ‘secretly’ waiting for HCPs engagement to get back to the pre-COVID way, which is in-person. These pharma executives are mostly Gen X or Baby Boomers, and they are analog-natives (grew up in a non-digital environment). Their primary focus is on the past, not the future, which means that they are looking at the future ONLY through a lens of the past, which limits the possibilities and opportunities they can see.

**Type #2 Reflexive Skeptics:** These are the ‘But’ people – their reflexive (not reflective) reaction to innovation-related topics is to say ‘but’. Examples: ‘but our MLR’, ‘but our compliance’, ‘but doctors will mention AEs’, ‘but doctors don’t trust pharma content’. Upon further reflection, they sometimes see the possibilities and become solution-oriented. Their primary focus is also on the past, not the future.

**Type #3: Frustrated Enthusiasts:** Driven to innovate, have good intentions, yet either lack sufficient digital competence/know-how, or are not set up for success/not empowered organizationally to drive innovation (little or no executive sponsorship, little or no budget, little or no authority, little or no control over strategy). They usually start their new digital job with a sense of excitement and enthusiasm and hope (that this time things will be different), only to find themselves frustrated after about a year of not being able to make the progress at the pace they desire.

**Type #4: Digital Change-Makers:** Driven to innovate, have the digital know-how and are organizationally set up for success (have the executive sponsor/budget, mandate to innovate, strong relationship and set up with the brand team, or are part of a product team). Usually have a vision for the new technology and see 2–3 years before others how that technology can be useful to the business. They are constructive, usually do their research, usually have a clearly documented strategy (content strategy, omni channel strategy, digital launch strategy...), and they have a budget to execute their strategy. They appreciate the value of data, personalized content delivery, intuitive user experiences, and are ready to drive change in a big way and advance their career as a by-product.”

As described by [Bozidar Jovicevic](#)

## Government

### Challenges

#### *Concentration of misinformation and loss of control*

One of the most significant challenges faced by governments, particularly those with substantial public health systems, is the spread of misinformation online in the realm of healthcare. This issue is exacerbated when search engines do not prioritise content from approved manufacturers of prescription medications or other reliable, evidence-backed sources. As a result, locally relevant information may be overlooked when AI chat tools scrape currently available data to respond to healthcare inquiries, leading to potential inaccuracies in the provided information.

To address these challenges, governments must scrutinise existing legislative frameworks and reassess them in light of the changing dynamics of how information on health care, particularly prescription products, is sought and delivered through these new interfaces. Governments must determine if their current policies are equipped for the future and, if necessary, quickly revise legislation to keep pace with the rate of change while simultaneously safeguarding the delivery of accurate health advice online.

It is crucial for governments to acknowledge, as a matter of urgency, the immense scale of healthcare-related queries submitted to search engines. These inquiries significantly influence the opinions and actions of various healthcare stakeholders, including patients and prescribing HCPs. Consequently, this widespread activity carries considerable implications for public health outcomes, patient safety, and potential cost overruns in public health budgets, as well as commercial ramifications for the healthcare industry.

By proactively addressing these challenges and adapting to the rapidly evolving digital healthcare landscape, governments can work to ensure the accurate and reliable dissemination of healthcare information, ultimately improving public health and safety.

#### *Resource and capability*

‘How can they effectively regulate what they don’t yet fully understand?’ – this represents a critical challenge. In the case of the TGA, collaboration with international partner agencies (for example, via the International Coalition of Medicines Regulatory Authorities (ICMRA)) would be valuable. Some specific approaches may be more fruitful (for example, learning from the Singaporean ‘Regulatory Sandbox’ approach).

### Opportunities

#### *Capitalising on momentum*

Emerging Australian Government policy suggests an interest in accelerating national AI capability and opportunities. Ensuring key government stakeholders understand the issues and potential opportunities offers a pathway to effectively drive action at the regulator level. The national regulatory framework will require coordination across federal and state/territory governments, so sharing insights on the dynamics of the new search landscape (using this white paper as a starting point) offers a way to catalyse awareness and action across these important stakeholders.

*Improving public health outcomes*

The introduction of chat-based AI healthcare tools offers governments numerous opportunities to improve public health outcomes, understand citizens' healthcare search behaviours, and increase patient engagement in their healthcare journey. These advances can lead to better patient outcomes, enhanced health equity and access, expedited drug discovery and approval, and greater personalisation in healthcare services.

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*"Governments need to work with the private sector on ways to limit the risks."*

Bill Gates, [The Age of AI Has Begun](#); Gates Notes blog, 21 March 2023

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Governments should seize the opportunity to harness the digitalisation of health advice, capitalising on the rapidly adopted behaviour of healthcare stakeholders who exchange questions for health advice. By creating an AI-based framework for interaction with healthcare stakeholders in a similar conversational style, governments can ensure the source content is limited to approved, locally relevant, evidence-based materials.

Once capabilities are built and resources in place to ensure patient safety, the primary focus for governments should be on building efficiencies through AI. This technology can streamline and speed up decision-making in response to changes in the healthcare landscape. In the context of public health systems with multiple layers of responsibility at both federal and state levels, establishing a platform for data sharing to optimise decision-making is essential.

Australian governments, in particular, have the opportunity to shape global policy and governance in response to the rollout of these AI tools. We have a track record as a nation of leading trends in similar areas so we should feel confident to step forward on this issue and establish a best practice response. (Sidebar: There are also opportunities outside 'search' to explore ways to leverage AI to expedite the approval process for drugs by the TGA, and facilitate more efficient pricing and reimbursement decision-making.)

To ensure HCPs understand the impact of these tools on the healthcare ecosystem, governments can lead the way in training and education. Investments in training materials and the simplification of delivery through micro-qualifications (for example, through government providers such as the New South Wales (NSW) Government's Health Education and Training Institute (HETI)) could be considered. Additionally, governments should address issues related to health data (for example, AIHW) concerning the accessibility, collation and reporting of patient data to maximise the potential benefits of these AI-driven technologies in health care.

Government stakeholders should reflect on the learnings from when platforms such as Google were launched and search engine results started to influence the narrative around medications. There is an opportunity to build on that past experience (what has gone well and what has not) and also inform our response with an understanding of what people are searching for now. By leveraging strategic search listening analysis to understand the quality of current digital information, government can adapt approaches to shape the new digital landscape to improve the experience and enhance public health outcomes by ensuring better quality of evidence-based, locally relevant advice.

Initially, the primary focus needs to be on building efficiencies. There is an opportunity to use AI to streamline and speed up decision-making in context of how to face this disruptive change. In an environment with a public health system that has layers of responsibility for deliverables at a federal level as well as siloed state health services, we are in great need of a national, intergovernmental platform for sharing data to optimise decision-making.

There is an opportunity for Australian governments to design best practice approaches that shape global policy and governance of the response to the rollout of these tools.

## Critical success factors

The therapeutics industry is responsible for the delivery of accurate and evidence-based information about their medical assets to healthcare consumers, prescribers and end-user patients. We already face a digital disconnect where stakeholders are being informed by unregulated sources online. This information gap is widening as we lose visibility of the digital information experience occurring about our medications within 'chatscapes'. Further, as traditional methods via search engine optimisation (SEO) and Google feedback are poised to lose their relevance, we are losing control of the ability to address misinformation.

To guide a response to the changing digital landscape, we brainstormed critical success factors (CSFs) for key departments within pharmaceutical companies, to propose goals that can shape digital change management strategies in the face of this profound shift in the way information about prescription and other healthcare products is delivered online to both patient and HCP stakeholders. The considerations brought up by the group during our think tank had a focus on Australia; however, they will have relevance around the globe as well, offering all such teams a running start on development of their own customised internal digital change management programs.

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*"A global CSF for companies is to use the 'F' word: **Fun!** Encourage people to play and use these tools as much as possible, to drive home the power of the tech."*

Friska Wirya, Digital Transformation Expert

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As an enterprise-wide consideration, we concurred that key performance indicators (KPIs) need to be integrated into all roles related to incorporating this technology, with a focus on a positive outcome for patients.

Please refer to the Appendix for details of our proposed list of CSFs by departments across:

1. C-Suite (senior management and leadership)
2. IT
3. Medical
4. Marketing and sales
5. Legal and regulatory

## Stakeholder engagement

Collaboration is key to any major initiative. To ensure the success of our efforts, we need to work closely with other stakeholders. By pooling our resources and expertise, we can achieve more than we could alone in the face of this internet-wide disruption. But *who* are the priority stakeholders we should be engaging with? To answer this question, we conducted a stakeholder-mapping exercise that identified five key healthcare stakeholder segments, and then determined what each specific partnership could bring to the table. Our goal is to ensure a more effective response to the changing digital landscape by working with these segments:

1. Patients
2. Healthcare Practitioners, including general practitioners and specialists
3. Healthcare practitioners across allied health
4. Industry
5. Government and other groups

To optimise the patient journey in the digital age, proactivity and collaboration is key. The goal is to shape the future healthcare landscape, leveraging points of overlap in each stakeholder engagement plan to ensure delivery on a common vision. The pace of change and scale of impact is significant, and it is critical to work together to ensure the new, AI-driven digital information experience is fit for purpose.

Please refer to the Appendix for further details on stakeholder engagement across different segments.



## Ethical considerations

### Navigating ethical framework

As AI becomes more widespread, the potential for harm increases; ethical considerations must be made to ensure a responsible and effective rollout.

There is potential for AI to spread misleading, harmful and inaccurate content to the masses. Understanding who is responsible for the accuracy of information delivered to the end user is vital, as is understanding where legal accountability lies if misinformation or inaccurate advice around a prescription medication is delivered to a patient or an HCP.

It is critical to understand who is responsible for the accuracy of the information delivered:

- Is the search engine itself responsible for the answers offered?
- Is the government responsible for legislating the framework of information accessed by the AI chat tools from outside their borders and delivered to residents?
- Are foreign websites used by AI chat tools as sources of information able to held responsible for the local relevance and truth of advice?

Where does legal accountability lie in the event misinformation or inaccurate advice around a prescription medication is delivered to a patient? Of even more concern, when this poor-quality advice is delivered to an HCP, who is responsible if this results in healthcare complications?<sup>16</sup>

There is an urgent need to establish the lines of responsibility and implement frameworks to maintain accountability. Currently, the dynamics of the real-world digital information experience in these AI chat tools concentrates unverified content from independent websites, and delivers it to patients along with ‘hallucinations’ (answers entirely made up by the AI tool, not based in fact). This is unacceptable, as it puts patients at risk of harm.

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*“Establishing lines of responsibility for poor-quality health advice will be key to improving future content.”*

AI Disruptions in Search, Roundtable Discussion, 30 March 2023

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### Digital vigilance

Given the long-established habits of patients to discuss with Dr. Google adverse events they consider may be caused by their prescription medications, we will see these same questions being entered into the chatbots – potentially with much greater detail than before.

- How are these events to be captured and responded to?
- Who has the duty of care for patients who will now consult these tools as a matter of course in relation to almost every health concern they have?

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<sup>16</sup> Brand Medicine International regularly reveals evidence of HCPs seeking specific advice on the use of medications online – we have proof that ‘Doctors Google too’ and this is based on the way the question is asked – for example ‘How to reconstitute [brand] vaccine?’ ‘What dose of Eliquis to treat DVT?’ and more.

- Given we are unable to draw a straight line from the answers supplied to the sources used, how do we ensure the correct labels or PI are being used to guide the advice given to patients and HCPs when they ask these tools questions about prescription medications?
- Who is responsible for updating out-of-date content?

Patients will increasingly spend more time with ‘Doctor GPT’ or ‘Doctor Bing’, which, unlike doctors, have not taken a Hippocratic Oath. It raises the question: what responsibility should these chatbots have, and how is this implemented and regulated?

There is much to consider on the ethical framework of these chat tools; however, it is clear that **accountability, responsibility and accuracy** must be prioritised.

These specific ethical considerations should be integral to organisations’ ethical frameworks:

1. **Privacy and security:** A paramount consideration is maintaining patient privacy and ensuring the security of their data. As AI healthcare advisers handle sensitive medical information, it is essential to establish robust data-protection mechanisms, comply with relevant regulations, and guarantee patients’ confidentiality is not compromised.
2. **Equity and accessibility:** Equitable access to information for all patients is vital in the healthcare setting. The healthcare and pharmaceutical industries must ensure AI healthcare advisers are trained in effective and ethical patient communication to a diverse population, and an awareness of differing levels of digital literacy. This means catering for varying ages, cultures, languages, education levels, socioeconomic backgrounds, and people with disability, to prevent exacerbating existing health disparities.
3. **Transparency:** Patients and HCPs must be able to identify the limitations of the AIs that they use. Currently, there is insufficient information to understand these limitations with all AIs.
4. **Physician support:** HCPs must be prepared to address patient concerns stemming from AI-generated advice. Physicians should be equipped with the tools and knowledge to respond to patients who reference AI-generated advice in consultations, thereby fostering trust and ensuring evidence-based treatment decisions.
5. **Equity of data:** AIs prioritise available data over bias mitigation and often data consumed is incorrect and subject to population bias. Therefore, AIs may provide biased information to patients and HCPs. It is important to mitigate for this bias and, if possible, to implement procedures that re-educate AIs.

The ethical framework surrounding chat-based AI healthcare advisers encompasses privacy and security concerns, equitable access to information, ethical AI communication, and physician support. By addressing these challenges, the healthcare industry can ensure a responsible and effective implementation of AI healthcare advisers, enhancing the quality of patient care and overall healthcare experience.

#### Considerations for planning:

- What is the potential cost of designing and implementing ethical frameworks for the delivery of health advice through these channels in terms of resources?
- Will this cost increase the cost of healthcare overall given the scale of interactions happening on these platforms?

### In summary

Overall, it is necessary to ensure information about prescription medications is locally relevant and does not deliver misinformation or off-label advice. It is noted, however, that exposure to other approved indications from overseas may also inform patient advocacy groups and offer them an understanding of the potential for a much-needed medication, which could then generate some advocacy for local approval that would benefit their group or community.

### What is the 'WIIFM' (what's in it for me)?

This paper contains considerable food for thought, but it is important we do not get lost in the detail. Rather, we should use it to build a roadmap to guide digital transformation that aligns with changes to the digital landscape in terms of search and dynamics in the exchange of questions for health advice.

By responding appropriately, we have the opportunity to reap many benefits:

- ✓ Ensure patients are able to access the information they need to facilitate a faster patient journey towards effective treatment.
- ✓ Meet our collective responsibilities to guide quality use of medicines.
- ✓ Maintain control of the narrative in relation to therapeutic assets, to ensure the reputation of these assets is not impacted by content published online by entities with no health credentials, and/or published commentary based on personal experience (N=1), not clinical body of evidence.
- ✓ Manage reputation to protect brand equity and commercial potential.
- ✓ Leverage AI-based chat as a top-of-funnel mechanism to connect with prescribing stakeholders and meaningfully engage with them to answer their questions about prescription products, thus building relationships based on trust.

## Conclusion

In this paper, we identified many components of a plan to adapt to the inevitable changes brought about by AI disruption in the healthcare search space. Further details are available in the Appendix that follows. In summary, we would like to highlight the following key actions as being of great importance in order to effectively address the anticipated challenges:

1. Reforming the governing framework/legislation on how health information (particularly in relation to prescription medications) is made available in countries where there is a total restriction on sponsors publishing information about their therapeutic entities directly to the general public.
2. Encouraging direct collaboration with search engines to align on delivery of locally relevant, evidence-based content, with a view to requiring them to provide links to local PI and CMI for any question about a medication.
3. Investing in internal retraining within healthcare and pharmaceutical organisations, and supporting a safe environment to ‘fail’ as we relearn our approach to digital strategy.
4. Exploring opportunities for the integration of medical information and search (‘Changing medical communication plans to embrace the change’).
5. Hiring experts from outside the ‘health space’ to advise on how to respond to changing search dynamics, while retaining existing talent and building on their knowledge base to fortify our ‘people stack’. This includes the importance of cross-functional collaboration to ensure the best outcomes for patients.
6. Promoting industry-wide collaboration to navigate a new and unrecognisable digital landscape, including engagement with industry associations and government to guide the necessary changes required to ‘clean up the internet’ for healthcare stakeholders.

### The critical importance of industry-wide and government collaboration

This challenge to understand the new digital landscape and protect the integrity of the digital information experience for healthcare stakeholders is bigger than something one company alone can respond to effectively. The round table agreed that an industry-wide reflection to assess current state of play and a collaborative approach is preferable to a fragmented company-by-company approach that would waste time and money while concurrently putting patients at risk.

Collaboration among industry members and collaboration between industry and government will be crucial to ensure information made available is evidence-based and that healthcare consumers/patients are accessing reliable, consistent, up-to-date information.

### The ultimate goal: Quality, evidence-based health advice delivered to patients online

Currently there is little transparency on *who* is providing the information – is it trustworthy? Is it applicable? ...Up to date? We need to create a pathway to personalise it for our stakeholders and ensure the correct resources are used as a source of content for chat-based search responses.

**The healthcare industry needs to have a voice in the chat narrative.**

While we work this out, there is need for an important education initiative to ensure consumers do not immediately rely upon information provided to them through chat-based search engines, or use these channels as a way to forego speaking to an HCP.

Ultimately, industry and government need to come together with one voice and invest in suitable upskilling to develop the expertise to navigate the new digital information landscape. A positive example of where we have been successful in working together in the past is the National Medicines Policy and, of course, our national response to COVID. This disruption offers us an opportunity to build on the success of our previous collaborations to respond to this latest challenge.

## Where to from here?

This is a really exciting time to be in any form of healthcare communication or education role, so let's lean into it! Change is the only constant we can rely on moving forward, and this change is poised to have a profound impact on the way health advice is delivered.

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*“We should try to balance fears about the downsides of AI ... with its ability to improve people's lives ... To make the most of this remarkable new technology, we'll need to both guard against the risks and spread the benefits to as many people as possible.”*

Bill Gates, [The Age of AI Has Begun](#), Gates Notes Blog, 21 March 2023

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By starting to understand AI chat search from the perspective of the end user – healthcare customers – and by working together to improve the digital information experience, we can dramatically improve health outcomes by ensuring quality health advice is delivered online.

There's never been a more urgent need for digital activism either, because pharma currently has little to no voice in the digital sphere, while patients and prescribers are being guided by external third-party publishers.

This improvement of the digital landscape can also be accelerated by decentralised approaches to inspire reform – we do not need to wait until we have self-organised for changes to be made. We invite you to take the insights from this white paper and apply them to your own roadmap for digital transformation – either within your organisation or externally with stakeholder groups.

We also invite you to continue the conversation and share your insights on successes and failures in relation to the delivery of information about your therapeutic assets to stakeholders across the new chat-based digital landscape by joining our LinkedIn Group: [#SearchListeningHealth | Groups | LinkedIn](#)

## Appendix

### A comparison of the outputs from three AI chat models: GPT-3.5, GPT-4, and Bard

**Introduction:** The rapid advancements in AI-based language models have opened new possibilities for generating content in various domains, including health care. The quality, accuracy and reliability of such content are essential for ensuring readers receive valuable and credible information. In this white paper, we assessed the performance of three AI-based models: GPT-3.5, GPT-4, and Bard, in generating a review article on a health-based topic. We examined their writing quality and their ability to provide accurate in-text citations when given a prompt about cancer research in Australia.

**Methodology:** Each model was given the following prompt: “Write a brief article on the current state of cancer research. Include statistics and at least 10 in-text citations. Only use Australian statistics and references.” The outputs of the three models were evaluated based on the quality of writing and the validity of the provided references.

**Results:** After reviewing responses provided by the three AI models, these observations were made:

GPT-3.5: This model provided a well-written response, with clear language and logical flow between ideas. However, it did not delve deeper into challenges and inequalities in cancer research. The response provided 12 sources, exceeding the 10-source limit specified in the prompt; however, **8 of these sources were invalid.**

GPT-4: GPT-4’s response was well-written, with a more academic writing style. The response covered advances in cancer research, challenges and future directions. It was well-structured, featuring an introduction, subheadings for recent advances and challenges, and a conclusion. It provided 10 in-text citations as requested, but these included **5 invalid sources.**

Bard: Bard’s response was also well-written, but considerably shorter and less detailed than the other two models. It provided a brief overview of cancer research areas but lacked an in-depth discussion of the progress and challenges within these areas. Bard provided only 4 in-text citations, not meeting the citation requirement. Furthermore, **all 4 of these citations were invalid.**

**Conclusion:** Based on the writing quality and structure, GPT-4’s response was the most comprehensive and well-organised, effectively discussing both recent advances and challenges in cancer research. GPT-3.5’s response had good structure and writing quality but lacked discussion on challenges and inequalities and contained a considerable number of invalid references. Bard’s response was shorter and less detailed, not meeting citation requirements with no valid references.

The interactions with and outputs from the three models are provided on the following pages:

Model: GPT-3.5

**Response:** (references in red are invalid)

Cancer is a significant health challenge in Australia, with an estimated 150,000 new cases of cancer diagnosed each year (1). However, the field of cancer research has made significant progress in recent years, with new treatments being developed that offer hope to patients.

Immunotherapy is an area of cancer research that has shown remarkable success in treating certain types of cancer. The use of checkpoint inhibitors, for example, has led to significant improvements in survival rates for patients with advanced melanoma, lung cancer, and bladder cancer (2).

Another area of focus in cancer research is precision medicine. By analyzing the genetic makeup of tumors, researchers can identify targeted therapies that are more effective and have fewer side effects than traditional chemotherapy (3). Precision medicine is already being used to treat some forms of breast cancer, lung cancer, and leukemia, among other types (4).

Despite these advances, there is still much work to be done in the fight against cancer. According to the Australian Institute of Health and Welfare, cancer is projected to be the leading cause of disease burden in Australia in 2020 (5). The need for continued research and development of new treatments is clear.

Fortunately, there is reason for optimism. The Cancer Council Australia reports that the overall five-year survival rate for cancer has increased from 47% in the 1980s to around 70% today (6). This is due in large part to improvements in early detection and treatment.

Researchers are also investigating the use of combination therapies, which involve using two or more treatments together to increase their effectiveness. For example, a combination of chemotherapy and immunotherapy has shown promise in treating certain types of cancer (7).

In addition to developing new treatments, researchers are also working to improve cancer screening and detection. This includes developing new imaging techniques and blood tests that can detect cancer at an early stage (8).

Clinical trials are an essential part of cancer research, and they are used to test new treatments and therapies. The Australian Cancer Trials website reports that there are currently over 900 cancer clinical trials being conducted in Australia (9).

Finally, researchers are also focusing on understanding the causes of cancer. This includes studying the role of genetics, lifestyle factors, and environmental exposures in the development of cancer (10).

In conclusion, while cancer remains a significant health challenge in Australia, progress is being made in the field of cancer research. Advances in immunotherapy, precision medicine, combination therapies, cancer screening and detection, clinical trials, and the study of cancer causes offer hope to patients, and the overall survival rates for cancer are improving.

Sources:

1. Cancer Australia. Cancer in Australia Statistics. <https://www.canceraustralia.gov.au/affected-cancer/what-cancer/cancer-australia-statistics>
2. Cancer Council Australia. Immunotherapy. <https://www.cancer.org.au/about-cancer/treatment/immunotherapy.html>
3. Australian Genomics Health Alliance. Precision Medicine. <https://www.australiangenomics.org.au/patient-stories/precision-medicine/>
4. Cancer Australia. Targeted Therapy. <https://www.canceraustralia.gov.au/affected-cancer/cancer-types/common-cancers/breast-cancer/treatment/targeted-therapy>
5. Australian Institute of Health and Welfare. Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2015. <https://www.aihw.gov.au/reports/burden-of-disease/burden-disease-study-illness-death-2015/contents/table-of-contents>
6. Cancer Council Australia. Cancer Survival in Australia. <https://www.cancer.org.au/about-cancer/what-is-cancer/cancer-survival-in-australia.html>
7. Australian Government Department of Health. Combination therapy for cancer. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/clinical-trials-1>
8. Cancer Australia. Cancer Screening. <https://www.canceraustralia.gov.au/affected-cancer/cancer-types/common-cancers/breast-cancer/screening>
9. Australian Cancer Trials. About Cancer Trials. <https://www.australiancancertrials.gov.au/about-cancer-trials>
10. Cancer Council Australia. What Causes Cancer. <https://www.cancer.org.au/about-cancer/what-is-cancer/what-causes-cancer.html>

Moreover, the development of new technologies has also helped advance cancer research in Australia. For example, researchers are using artificial intelligence (AI) to analyze large amounts of data and identify patterns that may not be visible to the human eye. This has the potential to revolutionize cancer diagnosis and treatment (11).

Collaboration is also essential in cancer research. Researchers from different disciplines and institutions in Australia are working together to develop new treatments and therapies. For example, the Australian Government's Medical Research Future Fund (MRFF) has invested in cancer research initiatives, including the Australian Brain Cancer Mission and the Prostate Cancer Research Alliance (12).

In conclusion, the current state of cancer research in Australia is one of progress and hope. Advances in immunotherapy, precision medicine, combination therapies, cancer screening and detection, clinical trials, and the study of cancer causes, as well as the use of new technologies and collaboration, offer hope to patients. Continued investment in research and development is necessary to build on these gains and ultimately find a cure for this devastating disease.

#### Sources:

11. Australian Government Department of Health. Artificial Intelligence in Healthcare. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/health-insights-ai>
12. Australian Government Department of Health. Medical Research Future Fund (MRFF). <https://www.health.gov.au/initiatives-and-programs/medical-research-future-fund-mrff>



Model: GPT-4

**Response:** (references in red are invalid)

Title: The Current State of Cancer Research in Australia: Progress and Challenges

## Introduction

Cancer remains a leading cause of mortality and morbidity in Australia, with 1 in 2 Australians expected to be diagnosed with cancer by the age of 85 (AIHW, 2021). Despite significant advancements in early detection and treatment, the burden of cancer continues to rise due to an aging population, increasing prevalence of lifestyle factors, and improvements in cancer detection (Cancer Council Australia, 2021). This article explores the current state of cancer research in Australia, highlighting recent achievements and future challenges.

## Recent Advances in Cancer Research

### 1. Immunotherapy

Australian researchers have been at the forefront of developing and improving cancer immunotherapies, which harness the power of the body's immune system to target and destroy cancer cells (Melero et al., 2021). Clinical trials conducted in Australia have shown promising results for various cancers, such as melanoma, lung cancer, and kidney cancer (Dummer et al., 2020; Herbst et al., 2020; Motzer et al., 2020).

### 2. Precision Medicine

Precision medicine, which tailors treatment based on a patient's genetic makeup, has emerged as a key focus in Australian cancer research (Cancer Australia, 2021). A recent breakthrough by Australian researchers identified a new class of drugs that can selectively target cancer cells with specific genetic mutations (Stordal et al., 2021). This discovery may lead to more effective and personalized treatments for cancer patients.

### 3. Early Detection

Detecting cancer at an early stage greatly improves the chances of successful treatment. Australian researchers have been developing innovative methods for early detection, such as blood tests that can detect cancer-related DNA in patients with no symptoms (Cohen et al., 2020). Furthermore, researchers at the University of Queensland have been working on a rapid, non-invasive diagnostic test for skin cancer using a handheld imaging device (Hill et al., 2020).

## Challenges and Future Directions

### 1. Addressing Cancer Inequalities

Cancer outcomes in Australia are not uniform, with Indigenous Australians and those living in rural and remote areas experiencing poorer outcomes (AIHW, 2021). Efforts must be made to address these disparities through increased funding for targeted research and improved access to high-quality cancer care in under-served populations (Whop et al., 2021).

### 2. Collaboration and Funding

Collaboration between researchers, healthcare professionals, and government agencies is crucial for driving innovation in cancer research. The Australian government has increased investment in cancer research, with the Medical Research Future Fund providing \$614 million in funding for cancer research projects between 2018 and 2021 (Australian Government, 2021). Continued support and collaboration are essential for maintaining the momentum of cancer research in Australia.

### 3. Cancer Prevention

A significant proportion of cancer cases can be prevented through lifestyle changes and public health interventions (Cancer Council Australia, 2021). Research into effective prevention strategies and public health campaigns should be prioritized to reduce the overall cancer burden in Australia.

## Conclusion

Cancer research in Australia has made remarkable strides in recent years, with advances in immunotherapy, precision medicine, and early detection showing promise for improving patient outcomes. However, challenges remain, including addressing inequalities in cancer outcomes, fostering collaboration, and investing in prevention strategies. Through continued innovation, investment, and collaboration, Australia has the potential to further revolutionize cancer care and make a significant impact on the global fight against cancer.

## References:

AIHW. (2021). *Cancer in Australia*. Australian Institute of Health and Welfare. Retrieved from <https://www.aihw.gov.au/reports/cancer/cancer-in-australia>

Australian Government. (2021). Medical Research Future Fund. Retrieved from <https://www.health.gov.au/initiatives-and-programs/medical-research-future-fund>

Cancer Australia. (2021). Precision Medicine. Retrieved from <https://www.canceraustralia.gov.au/affected-cancer/cancer-types/precision-medicine>

Cancer Council Australia. (2021). *Cancer Facts and Figures*. Retrieved from <https://www.cancer.org.au/about-cancer/what-is-cancer/facts-and-figures.html>

Cohen, J. D., Li, L., Wang, Y., et al. (2020). Detection and localization of surgically resectable cancers with a multi-analyte blood test. *Science*, 359(6378), 926-930.

Dummer, R., Hauschild, A., Santinami, M., et al. (2020). Five-Year Analysis of Adjuvant Dabrafenib plus Trametinib in Stage III Melanoma. *The New England Journal of Medicine*, 383(12), 1139-1148.

Herbst, R. S., Giaccone, G., de Marinis, F., et al. (2020). Atezolizumab for First-Line Treatment of PD-L1–Selected Patients with NSCLC. *The New England Journal of Medicine*, 383(14), 1328-1339.

Hill, M., Kho, E., Lee, D., et al. (2020). A novel imaging system

for rapid and accurate diagnosis of skin cancer. *Scientific Reports*, 10, 10103.

Melero, I., Berman, D. M., Aznar, M. A., et al. (2021). Evolving synergistic combinations of targeted immunotherapies to combat cancer. *Nature Reviews Cancer*, 15(8), 457-472.

Motzer, R. J., Escudier, B., George, S., et al. (2020). Nivolumab versus everolimus in advanced renal cell carcinoma. *The New England Journal of Medicine*, 373(19), 1803-1813.

Stordal, B., Pavlakis, N., Davey, R., et al. (2021). A new class of drugs selectively targeting cancer cells with specific genetic mutations. *Nature Communications*, 12, 4291.

Whop, L. J., Garvey, G., Baade, P., et al. (2021). Closing the gap in Indigenous cancer outcomes: The development of an Indigenous cancer research agenda. *Australian and New Zealand Journal of Public Health*, 45(3), 205-210.

Model: Bard

**Response:** (references in red are invalid)

Cancer is a major cause of death and illness in Australia. In 2021, it is estimated that about 151,000 Australians will be diagnosed with cancer (413 per day) and 49,000 will die (135 per day).<sup>1</sup>

Cancer research is a major focus of Australian medical research. In 2020, the Australian Government invested over \$1.4 billion in cancer research.<sup>2</sup> This funding supports a wide range of research projects, from basic research into the causes of cancer to clinical trials of new treatments.

One of the most important areas of cancer research is the development of new drugs and treatments. In recent years, there have been significant advances in the treatment of many types of cancer. For example, the development of new targeted therapies has revolutionized the treatment of some cancers, such as melanoma.<sup>3</sup>

Another important area of cancer research is the prevention of cancer. There is strong evidence that many cancers can be prevented through lifestyle changes, such as quitting smoking, eating a healthy diet, and exercising regularly.<sup>4</sup>

Cancer research is a complex and challenging field, but it is also an incredibly rewarding one. Every day, researchers around the world are making progress in the fight against cancer. The Australian Government is committed to supporting this important research, and we are confident that through this investment, we will continue to make significant progress in the fight against cancer.

In-text citations:

1. Australian Institute of Health and Welfare, Cancer Australia. Cancer in Australia 2021. Canberra: AIHW; 2022. \*
2. Australian Government. Department of Health. Health Research Investment Strategy 2020-2025. Canberra: Department of Health; 2020. \*
3. Cancer Council Australia. Cancer Statistics 2021. Sydney: Cancer Council Australia; 2021. \*
4. Cancer Council Australia. Cancer Prevention. Sydney: Cancer Council Australia; 2021. \*

\* Unclear if these references are valid as they do not point to a specific web page or article.

*Follow up prompt:* Your citations are invalid. They should point to a specific web page or article.

**Response:**

Sorry, I apologize for the error. Here are the corrected in-text citations:

1. (Australian Institute of Health and Welfare, 2022, p. 1)
2. (Australian Government, 2020, p. 2)
3. (Cancer Council Australia, 2021, p. 3)
4. (Cancer Council Australia, 2021, p. 4)

### Critical success factors (details)

The following section offers details of our proposed list of CSFs by departments across:

1. C-Suite (senior management and leadership)
2. Information technology
3. Medical
4. Marketing and sales
5. Legal and regulatory

#### C-Suite (senior management and leadership)

##### *Knowing, accepting and embracing this change*

Markets are conversations, and the conversation online is more influential now than ever. This growing influence of the digital landscape has potential to have significant commercial implications, so it is critical to form a strategy to monitor and respond. Senior leadership can play a key role in policy development, help to create opportunities for collaboration, balance the risks/benefits and allocate resources. Senior leadership will need to offer active and visible support of embracing this change, which includes setting an internal company culture that encourages staff to learn about the anticipated changes. It is imperative to allocate budget towards understanding and influencing the new digital landscape (at the very least to manage asset reputation and promote quality use of medicines by identifying and removing misinformation).

##### *Creating a safe culture*

The nature of this change means that past success cannot be relied upon as a guide for how to respond. It will also be important to accept there will be failures and to nurture a culture of **leaning into change rather than fearing it**.

##### *Encouraging (and rewarding) cross-functional collaboration*

It will be important to quickly adapt to the new digital environment and maintain this ability to adapt. To do so, organisations will need training and structures to equip teams and departments to be responsive. This will best be achieved by removing and breaking silos, particularly between IT and other departments within organisations.

In addition, organisations should be futureproofing through diligent horizon scanning that accounts for the digital transformation we are currently bearing witness to, and empowering teams to work together to adapt how to engage with customer stakeholders.

##### *Encouraging reverse mentorships*

While experienced executives have lived through the transformational business world, with the advent of the iPhone and the rollout of Google search, younger employees will be digital natives. Senior executives can offer insights into the way businesses responded to the rollout of these previous transformational disruptions (successes/failures). While we can certainly learn from the past to navigate the future, we can also enhance our response to this profound disruption with the engagement of junior mentors. This would empower partnerships within an organisation that offer perspectives from both ends of the digital literacy spectrum, which can be used to inspire and guide realistic adaptations to digital transformation in relation to AI chat replacing traditional search.

*Integrating long-term KPIs despite short–medium-term tenure*

Pharmaceutical leadership should be motivated to take the risks required to navigate this new landscape, and this should be linked to their KPIs. When leadership tenure is short term, this promotes short-term goals; however, we are now faced with a challenge that requires long-term transformation. Industry needs to be cautious of the temptation to prioritise short-term solutions or quick wins and instead should establish measures that are designed for successful, long-term adaptation. Motivation to drive long-term success needs to be part of the equation for local pharmaceutical leadership.

*Engaging in the process*

Leaders need to engage across all levels to maintain awareness of what is occurring and changing ‘on the ground’. Local experiences will be crucial in terms of transmitting up through the chain for organisations where the C-Suite sits globally. Understanding these best-practice examples (including failures) increases potential of adapting to this change successfully. To optimise the change management process, leaders need to ensure they account for the perspectives of all stakeholders (both internally and externally) to truly understand the real-world dynamics impacting the healthcare ecosystem, patient outcomes and commercial potential.

## Information technology

*Playing a central role in digital transformation*

The information technology (IT) department is absolutely central to an organisation’s ability to successfully adapt and leverage this profound change to the digital information landscape. Companies that recognise the IT department as much more than ‘just a help desk’ to leverage its vast source of knowledge, skills and capacity to train others across the organisation are going to be the ones that move forward more quickly.

*Claiming a seat at the table*

IT teams need to proactively communicate their value proposition to establish a common understanding of IT as a business partner. To successfully understand and navigate the new paradigm, pharmaceutical companies will need IT to always have a seat at the table.

*Genuinely understanding pharma customer stakeholders*

IT recognises that end customers are the most important and it understands how tech interfaces with HCPs and patients. To truly empower the IT department to add value to the transformational change of an organisation, it is important for them to also be offered first-hand experience, to get into the field to truly see the interactions on the front line between sales and their customers as well as medical and their stakeholders.

*Understanding the business objectives and promoting inclusion as a cross-functional contributor*

For IT to truly contribute, it needs to understand the business needs and work in close partnership with other functions such as medical information and marketing. Incorporating IT as a business partner will help to build organisational capabilities to respond to this disruption.

*Setting realistic and clear goals and responsibilities*

IT can provide the bigger picture context from a tech point of view to offer a realistic awareness for practical implementation of change. There will also be cybersecurity and data privacy considerations that will require its specialised capabilities. IT can also offer the expertise to guide how building on your tech stack needs to start with your people stack.

It will be important to define a set of principles – a position statement that clarifies accountabilities. For example, with respect to data exchange, who owns it? While this position statement can be developed and led by IT, it should become a business-wide responsibility to respond to this change.

*Playing a role in facilitating responsible delivery of information about prescription assets*

IT should actively collaborate with stakeholders across the organisation to ethically guide the moderated delivery of health advice, particularly information about medications. IT can bring ideas to brainstorm about tactical responses across omni-channel engagement under the influence of AI chat platforms.

## Medical

*Embracing this leadership opportunity*

There is an opportunity for medical to lead our response as a change agent for industry, so it will be important for us to tell the story of the implications of how information is currently exchanged online about the medications we are responsible for. By connecting with our colleagues, as well as external stakeholders, medical has the opportunity to lead the way to clean up the internet for patients as well as our prescribing HCP customers.

*Starting from the end-user perspective*

This is about balancing the doctors' view versus the product-centric or regulatory view of the digital information landscape. It is critical to understand the real-world digital narrative, as medical is going to be responsible for driving the urgency in relation to improving the quality of this.

By tapping into the wisdom and lived experience of patient groups we can understand their point of view and the influences that shape their understanding of their respective diseases.

*Enhancing appropriate patient-engagement strategies*

Studying the new digital landscape will gain insights to understand patient journeys, perceptions and unmet needs.

*Accounting for external context*

External content involves identifying and understanding industry-specific CSFs and defining aligned company-specific CSFs.

*Having realistic expectations*

Medical must develop an understanding of what is controllable versus what is not, and designing a strategic approach that is realistic.

*Informing change management strategy with tools currently available*

By capturing and banking insights from current search behaviour in the well-established digital landscape through search listening, Medical can generate a plan how to transition and leverage this dynamic within integrated medical communications plans.

*Being mindful of the commercial reality*

The impact of poor advice received online about medications extends beyond quality use of medicines and patient safety, as it can also erode brand reputation, drive primary non-adherence, influence prescribers and reduce the commercial returns to an organisation.

*Designing an approach around these four buckets of focus*

1. Pharmacovigilance (PV)
2. Organisational
3. External collaborations
4. Regulatory

*Embracing a trial-and-error approach (permission to fail)*

Early initiatives such as deploying pilot initiatives to accelerate our evolution in response to the changing digital environment can deliver key insights and learnings we can apply as we expand our evolution. These pilots offer opportunities to bring others along and they can stop in our country as a test market to design a best practice that can be adopted elsewhere.

*Proactively engaging across functions and upwards within the organisation*

It will be important to have a representative from medical with the authority to elevate above the function and interact with the commercial compliance regulatory legal and public affairs departments within the organisation.

## Marketing and sales

*Understanding the tools and their influence*

All marketers need to understand both the tool that is being adopted by our customer stakeholders and the environment that it is being used in. It is important for all stakeholders to take account of this platform that influences opinions and behaviour in relationship to our products in the market.

*Inspiring a response*

Marketing and sales are in a strong position to drive the desire for change, by conveying to internal stakeholders the 'WIIFM' (what's in it for me?) as a starting point. A basic benefit for marketing could certainly be saving time and money in the development of materials by using AI to generate first drafts of healthcare communications (being extremely mindful of proprietary information). The capacity created by this can then be invested in learning how to navigate and master the new digital information landscape.



*Setting a pre-emptive goal with the future customer digital information experience at the heart of it*

An ultimate goal for marketing could be ‘search chat optimisation’ (‘SCO’ as opposed to SEO), designed to deliver evidence-based, locally relevant customer-responsive content to patient and HCP stakeholders through chat platforms.

*Allocating funds for this channel*

It will be important to allocate a budget for responding to chat-based health advice. Established channels for delivering disease education to patients (for example, using SEO) may well be impotent now with respect to getting this advice in front of the right stakeholder in the future. We need to acknowledge the decision around channel choice for both patient and HCP stakeholders is now more complex, and getting quality answers into these channels will require additional resources.

*Maintaining powerfully effective use of other channels*

While we figure out how to have a voice in chat platforms, we also need to increase our engagement using existing channels. Understanding the real-world information needs of stakeholders by ‘search banking’ (see p23) existing questions entered into Google, for example, gives us a running start to identify pathways to **deliver answers to those queries at other touchpoints before our stakeholders turn to AI chat**. This strategic approach can provide a buffer between the transition from the internet as we know it and the internet to come.

*Going beyond the brand with healthcare communication strategy*

There is an opportunity for marketing and sales to move beyond the delivery of key selling messages about their brands in the new digital information landscape. Health outcomes are poised to become a function of health literacy and digital literacy for all stakeholders, so supporting customers to effectively navigate the rise of these AI chat tools offers a valuable way to build relationships built on offering authentic and relevant support.

*Investing in existing teams through building new skills on top of their knowledge base*

Established marketing and sales professionals in pharma know the healthcare landscape intimately. They understand the patient journey, the regulatory framework and company expectations. It would be tempting to hire in professionals from outside the pharma industry to accelerate the adaptation of marketing functions in the face of this disruption, but that could be a mistake. An effective long-term response can be built on the platform skills of existing marketing professionals and supporting them to acquire the necessary knowledge to evolve their skill set to meet new performance KPIs.

*Planning for contingencies – what if chat ‘goes away’?*

New models of search are in their infancy, so it is critical not to jump ship too soon. Recall the lessons of the dot.com collapse, and ensure that traditional channels of communication remain open, if not stronger than ever. Putting all communication ‘eggs’ in one basket by focusing too much on AI chat search risks investment in information in the event these tools are banned (as happened temporarily in Italy<sup>17</sup>) or withdrawn, or change their funding models and lose users.

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<sup>17</sup> [ChatGPT banned in Italy over privacy concerns - BBC News](#)

## Legal and regulatory

### *Reforming the regulatory framework*

Legal and regulatory departments (Legal) have an opportunity to shape the governing framework and legislation. Given the existing dynamics within traditional search, as illustrated by our Share of SERPs analysis – and this is the content given priority by chat tools to inform their responses – Legal is in a strong position to convey the urgent need for an update to the *Therapeutic Goods Act 1989* (the Act). It is evident from our research the current version of the Act is not fit for purpose in the current digital landscape, and is woefully unprepared to support the delivery of accurate health advice in a digital landscape transformed by AI chat tools. Legal needs to illustrate that the implications of restrictions on having a presence direct to customers online result in a digital vacuum being created, inadvertently elevating the prominence of unverified sources of information about prescription medications online. This leads to a bias in the content delivered to the end user, whether that be a patient or a prescribing stakeholder.

### *Managing fear*

For change to occur, we also need to find a way to remove the fear around delivering responsible answers to real-world questions while complying with the Act. Legal needs to guide the way to empower responsibility for organisations to answer questions their stakeholders ask about the medications they are responsible for.

### *Empowering innovation*

By recognising the threats posed by a digital healthcare relationship with AI chat-based search tools on the therapeutic assets owned by the organisation, Legal and Regulatory need to establish internal frameworks that enable the necessary innovation to respond appropriately.

### *Catalysing digital transformation*

Legal can also play a role in overcoming resistance to change through education, both within the organisation as well as of external governing bodies such as the TGA.

### *Ensuring compliance with data privacy requirements*

Legal will also need to be custodians of privacy and patient data. Data privacy issues will need to be worked through as a specific workstream.

### *Promoting an industry-wide, united front to respond to this change*

To maintain pace with the rate of change occurring, a representative from legal or regulatory should be appointed to share best practice across the industry. The goal is to limit competition in areas where there is no need to be competitive, by embracing a collaborative approach to the delivery of health advice online in the new digital landscape. We are all bound by the same rules and regulations, so it is critical to urgently redesign a regulatory framework that is future fit and patient serving.

Legal and regulatory representatives within the industry have a role to play to redefine the future regulatory landscape so it is fit for purpose; if they do not, we risk failing as a collective to ensure the delivery of evidenced-based and locally relevant advice about medications to end users online.

**Legal teams take note:**

Ensure that instructions to all employees and vendors are clear: do not put any proprietary or personal data of any kind into ChatGPT.

ChatGPT and DALL-E are research projects from OpenAI. They are used to look at how we would interact with these models. When you write content into these services specifically, OpenAI retains the right to look at your content, look at the output that comes from it, and then learn from it to make better services.

When you input data into ChatGPT, it may be viewed by OpenAI staff. Therefore, if you are putting company information, including proprietary information, into ChatGPT, you are leaking that information to a third party.

Samsung allowed its staff to use ChatGPT to help it write better code. And in doing so, its employees put proprietary code into ChatGPT and that code is now in the hands of OpenAI. The same incident that happened to Samsung is playing out right now in companies all over the world, whether they know it or not.

It is important to note here, this applies to anything, not just code. So, if you are writing a blog post and you write it into ChatGPT, you are doing the same thing: you are handing over your data to OpenAI.

**Morten Rand-Hendriksen**

## Stakeholder Engagement (details)

The following section offers further details on stakeholder engagement across these segments:

1. Patients
2. Healthcare professionals including general practitioners and specialists
3. Healthcare professionals across allied health
4. Industry
5. Government and other groups

### 1. Patients

Patients need evidence-based guidance delivered with empathy that accelerates their patient journey from symptom to diagnosis, and towards the right treatment, to resolve or effectively manage their condition so they can focus on their lives instead of their illness.

How can patients be a part of this movement in a way that ensures they receive reliable educational support at the right time during their online search? It will be essential to understand their needs and concerns and involve them in the co-creation of solutions. The engagement plan with patients should focus on building trust, ensuring transparency, and demonstrating empathy towards their challenges.

When considering patients' needs, the following groups should be consulted:

- Patient groups
  - It is essential to encourage patient advocacy and patient support groups to monitor responses to questions about their category served by AI search tools. When misinformation is presented, it can be flagged to their community quickly to diminish its influence. This approach offers a proactive way to report and guide poor-quality responses to the search server.
- Patient support groups
  - Similar to the above.
- Carers
  - Carers should be encouraged to have regular check-ins with their patients to understand what they are finding online and ensure they are not being led down digital rabbit holes with poor-quality advice, particularly about the use of their medications.
- Friends and family
  - Similar to the above.

All these groups will need support in navigating new AI-fuelled conversations about their condition. One way to start the conversation and encourage discernment in sourcing health advice from new search channels is by developing a toolkit that includes an assessment of the pros and cons.

### 2. Healthcare professionals (general practitioners and specialists)

While on one hand, the amplified power of the virtual HCP, commonly referred to as 'Dr. Google' – a term that now extends to all search-based activity where health advice is delivered – will be frustrating, on the other hand there are benefits for this frontline group of healthcare stakeholders to harness.

Offering a top-line position statement on the use of AI-based search for health advice could offer these groups an 'anchor point' for their own work to respond to this change. Supporting them with tools to workshop their own evolution in this context could be of great value to accelerate their

adaptation. Providing them with educational tools to share with patients on the importance of being discerning about the use of these tools for health advice will help to ensure dissemination of this important advice across the healthcare ecosystem.

Guiding HCPs on tips and tricks to the integration of these tools into their consultations with patients could lead the way towards effective hybrid consultations, where the activity of patients is taken out of a blind spot (consulting their phone at 3 a.m. at home) and illuminated clearly with the HCP present to immediately address any misinformation. This shift in approach from ‘Don’t google it’ to embracing the behaviour might be the best way to ‘win’ the war against misinformation. It is a big step for professional associations to trial this, which is why a transparent approach across all groups using pilots to gather the early insights on what works and what does not in this consultation structure will be important to shape future best practice.

Professional associations that represent medical doctors and specialists in Australia to be considered for engagement include:

<ul style="list-style-type: none"> <li>➤ <a href="#">Australian Medical Association (AMA)</a></li> <li>➤ <a href="#">Royal Australasian College of Physicians (RACP)</a></li> <li>➤ <a href="#">Royal Australasian College of Surgeons (RACS)</a></li> <li>➤ <a href="#">Rural Doctors Association of Australia (RDAA)</a></li> <li>➤ <a href="#">Australasian College of Dermatologists (ACD)</a></li> <li>➤ <a href="#">Australasian College for Emergency Medicine (ACEM)</a></li> <li>➤ <a href="#">Australasian College of Sport and Exercise Physicians (ACSEP)</a></li> <li>➤ <a href="#">Australian and New Zealand College of Anaesthetists (ANZCA)</a></li> <li>➤ <a href="#">Australian College of Rural and Remote Medicine (ACRRM)</a></li> <li>➤ <a href="#">Australian Health Practitioners Regulation Agency (Ahpra)</a></li> <li>➤ <a href="#">Australian Indigenous Doctors’ Association (AIDA)</a></li> <li>➤ <a href="#">College of Intensive Care Medicine (CICM)</a></li> </ul>	<ul style="list-style-type: none"> <li>➤ <a href="#">Medical Deans of Australia and New Zealand (MDANZ)</a></li> <li>➤ <a href="#">National Aboriginal Community Controlled Health Organisation (NACCHO)</a></li> <li>➤ <a href="#">Royal Australasian College of Medical Administrators (RACMA)</a></li> <li>➤ <a href="#">Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)</a></li> <li>➤ <a href="#">Royal Australian and New Zealand College of Ophthalmologists (RANZCO)</a></li> <li>➤ <a href="#">Royal Australian and New Zealand College of Psychiatrists (RANZCP)</a></li> <li>➤ <a href="#">Royal Australian and New Zealand College of Radiologists (RANZCR)</a></li> <li>➤ <a href="#">Royal Australian College of General Practitioners (RACGP)</a></li> <li>➤ <a href="#">Royal College of Pathologists of Australasia (RCPA)</a></li> </ul>
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A national taskforce to spearhead a response to the influence of these tools on patients, which can be leveraged by all these groups of HCP stakeholders, would be the most efficient way to adapt in a suitable timeframe. Given the rate of change occurring, working co-operatively is preferable to each group undertaking similar initiatives and duplicating the work, while amplifying the cost of a response across the system. What is ideally needed is one focused effort by a central team that includes AI professionals who understand these tools, and communications professionals to create and disseminate the guidance and articulate best practices.

### 3. Healthcare professionals (allied health)

Beyond the frontline treaters, there are many other groups with an influence on patients – some of these are quite advanced in the digital journey and so their expertise can be leveraged to support patients.

Pharmacy is one of the most significant of these groups as they are directly in contact with patients regarding the use of medications (one of the largest components of search activity). It is crucial they are activated as a group to step up and offer more proactive information at the point of dispensing prescription drugs and selling OTC medications. This is particularly important for two reasons:

1. Some of the chat tools are trained on data that is already years out of date, impacting the advice available on newly available medications and recently approved indications.
2. None of the tools have easy access to openly published local information about prescription medications due to the regulatory restrictions, so foreign content is concentrated in the responses offered in Chat – thus, it is imperative to answer key questions offline, wherever possible, to protect patients from misinformation.

A communication campaign to engage and activate pharmacy would be enormously valuable to inspire a timely adjustment to the way medications are dispensed during this period while search evolves to chat. Key messages of this campaign should include insights on how it affects pharmacy from a commercial point of view as well, and how supporting patients will add value to pharmacies.

Part of this should be continuing medication education (CME) training to understand the digital information experience of patients, and the importance of frontline delivery of information. The CME should proactively address key patient concerns to ensure delivery of advice that drives quality use of medicines.

We identified the following peak bodies that could be instrumental in both minimising the need for patients to turn online for advice about Rx medications and in guiding patients in how to do search in the new landscape.

- Pharmacy Guild (<https://www.guild.org.au/>)
- Pharmacy Banner Groups (<https://www.apgroup.com.au/>)
- Australian Primary Health Care Nurses Association (APNA) (<https://www.apna.asn.au/>)
- NSW Nurses and Midwives' Association (NSWNMA) ([nswnma.asn.au](https://www.nswnma.asn.au/))
- Other unions in the healthcare sphere
- Diabetes educators (<https://www.adea.com.au/>; <https://ahpa.com.au/allied-health-professions/credentialled-diabetes-educators/>; <https://ahpa.com.au/our-members/australian-diabetes-educators-association/>; <https://www.diabeteseducator.org/>)
- Cancer support groups such as Cancer Council, Rare Cancer (<https://www.cancer.org.au/support-and-services/support-groups>)
- Dietitians (<https://dietitiansaustralia.org.au/>)
- Psychologists/counsellors (<https://www.pacfa.org.au/>; <https://www.goodtherapy.com.au/flex/professional-associations/301/1>; <https://www.theaca.net.au/>; <https://ahpa.com.au/our-members/australian-counselling-association/>)
- Social workers (<https://www.aasw.asn.au/>; <https://ahpa.com.au/our-members/australian-association-of-social-workers/>)
- Optometrists (<https://www.optometry.org.au/>; <https://ahpa.com.au/our-members/optometry-australia/>)

- Chronic management plans (easy pathway to help nurses)  
(<https://www.healthdirect.gov.au/management-of-chronic-conditions>;  
<https://www1.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare-chronicdisease-pdf-infosheet>; <http://www.ayrmedical.com.au/chronic-disease-gp-management-plans/>)

#### 4. Healthcare industry (companies selling pharmaceutical and over-the-counter medications)

The priority for industry is to accept this is a profound change that will impact the use of medications we represent (as well as the reputation of brands) and that to maintain an evidence-based narrative in the new public digital domain, we need to work together in the implementation of our response.

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*“... the way the code is designed, it’s really got industry members pitted against each other, always looking out to see ‘Oh, what are they doing wrong? Let’s get them!’ And fines are issued, with companies publicly shamed and individuals held accountable. It creates a culture of fear ... and it’s actually holding us all back from being patient-centric and moving forward to meet their needs online.”*

Roundtable Discussion

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#### Industry sector peak bodies:

- [Medicines Australia](#)
- [Therapeutic Goods Administration \(TGA\)](#)
- [Medical Affairs Professionals of Australasia \(MAPA\)](#)
- [Medical Technology Association of Australia \(MTAA\)](#)
- [Consumer Healthcare Products Australia \(CHPA\)](#)

As a starting point our group, which includes MAPA, will collaborate with other Medicines Australia (MA) members who are interested to propose an approach to adapt the regulatory framework to the new digital landscape, to improve the chances of correct information being offered to patients about their medications. This is likely to include the need to meet with the TGA to review the situation from the highest level and ensure a future-fit response. We will also consult with CHPA to ensure the approach serves their members as well.

Peak health sector groups may also need to be considered for how best to involve them, and we have listed some of the segments to keep on our radar moving forward:

- Hospital groups
- Insurers
- Academic research organisation
- Department of industry bodies
- Private health service providers (such as Telstra, which is making big incursions into health)

## 5. Government and other stakeholders

### *Federal Government*

Given we are on the cusp of this transition, the Australian Government has an opportunity to lead the way by developing and launching a medical information app (or AI-driven website) to intersect with the adoption of chat-based search tools for healthcare queries. The timing of this rollout and the customer experience delivered is critical because with delay to this rollout, habits will be established and relationships built with the current search engines that will be challenging to alter. Costs of generating chat-based responses into the future also need to be considered. This could be overcome by simply pre-populating pre-approved answers to key questions that can be delivered via search within the tool (or website) versus 'generated' each time a question is asked.

Key websites that currently have strong domain authority in the SERPs across prescription medications (as identified in our research) will need to be audited to ensure content is up to date and edited and that the content is available to be incorporated by AI in a conversational and accessible style. Ideally, the information in these sites will also be updated to ensure it answers the top-volume questions we see patients asking search engines, as this will reduce the digital disconnect whereby answers are scrapped by chatbots from less reputable sites.

- [NPS.org](https://www.nps.org.au)
- [TGA](https://www.tga.gov.au)
- [PBS](https://www.pbs.gov.au)
- [Better Health Victoria](https://www.betterhealth.vic.gov.au)
- [MyDoctor](https://www.mydoctor.com.au)

Medical Director software is another tool. It can activate alerts for screening and enhance HCP capabilities to compete with AI-driven interactions regarding health concerns. This may also be a pathway to ensure HCPs have an easily accessible, verified source of local advice that may deter the need to simply 'google it'.

### *Search engines*

- Microsoft New Bing with ChatGPT integration
- Google + Bard

It would be prudent to ask search engines to tag all questions about prescription medications within the Australian environment with the appropriate local PI or CMI related to that product. This should be a mandatory regulatory requirement for any channels offering advice on these prescription entities. While it may seem audacious that this goal could be achieved, 'we won't get what we don't ask for', so by gathering a critical mass of stakeholders (which ideally includes government representatives such as the federal health minister and the minister for communications, and peak bodies such as the AMA and Pharmacy Guild) and making our case for this based on evidence drawn from use of the tools for key questions, we have a good chance of activating this alignment with the search engines.



### Ethical considerations – UNESCO principles

For reference purposes, we also include below some basic principles on ethical AI as defined by United Nations Educational, Scientific and Cultural Organization (UNESCO);<sup>18</sup> implementing these could address some of the risks associated with use of AI:

#### Principle: Responsibility and accountability

43. “Appropriate oversight, impact assessment, audit and due diligence mechanisms, including whistle-blowers’ protection, should be developed to ensure accountability for AI systems and their impact throughout their life cycle. Both technical and institutional designs should ensure auditability and traceability of (the working of) AI systems to address any conflicts with human rights norms and standards and threats to environmental and ecosystem well-being.”

#### Policy Area 1: Ethical Impact Assessments

53. “...The assessment should also establish appropriate oversight mechanisms, including auditability, traceability and explainability, which enable the assessment of algorithms, data and design processes, as well as include external review of AI systems ... “

#### Policy Area 2: Ethical Governance and Stewardship

56. “Member States are encouraged to ... consider forms of soft governance such as a certification mechanism for AI systems and the mutual recognition of their certification... Such a mechanism might include different levels of audit of systems, data, and adherence to ethical guidelines and to procedural requirements in view of ethical aspects ...”

58. “Member States should encourage public entities, private sector companies and civil society organizations to involve different stakeholders in their AI governance and to consider adding the role of an independent AI Ethics Officer or some other mechanism to oversee ethical impact assessment, auditing and continuous monitoring efforts and ensure ethical guidance of AI systems ...”

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<sup>18</sup> [Artificial Intelligence: UNESCO calls on all Governments to implement Global Ethical Framework without delay | UNESCO, Press release, 30 March 2023.](#)

### Identifying our 'known unknowns'

We are bearing witness to the most profound change in the way information is exchanged – and not just in healthcare. Responding to this is daunting and it is easy to feel overwhelmed – and for those who step up, imposter syndrome can be a big influence on confidence to implement solutions.

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*“Knowing what you don’t know is more useful than being brilliant.”*

Warren Buffet

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For our group, we had many questions, which in the safe place of our roundtable discussion, we felt comfortable to share. While the experts at our table were able to answer some of them, the answers were not simple and we were unable to address all of these on the day:

- Can you teach ChatGPT (**really**)? i.e. How effectively can the content in answers be refined to ensure accuracy based on feedback?
- How are GPT and other similar models being monetised?
- Is AI-based chat search influenced by other information algorithms based on user behaviour across other websites and apps, for example Facebook?
- Can advertisements be placed in search chat responses?
- Can we know the questions that are being asked of chat search tools, and the volume/frequency? (as we can determine currently with tools such as Semrush)
- Is local input prioritised over global content?
- Will websites 'go away'?
- Is SEO dead? How will content be prioritised in these models' responses?
- Can ChatGPT produce a video response to your question? (Coming in GPT-4?)
- If a website is removed or reported for containing misinformation, does the content of that website continue to appear in chat responses after the website has been removed?
- Does AI chat create a profile of you, and does it use this context in the future to deliver answers?
- How do publishers get money back from copyright content being used to deliver information?
- How easy is it to game the system and what are the risks to health of people using this (misinformation)?
- Does content that sits behind a firewall, such as information about prescription medications, get picked up by AI models to be included in chat responses to search queries?
- Who is liable for misinformation presented to patients or HCPs about prescription medications?

*What we do know* about what we don't know, is that navigating our way forward starts with being curious – and putting questions such as those above out there for discussion. By doing this and sharing knowledge, we will all learn new skills about reaching our audiences in the new online landscape.



# RESPONDING TO AI DISRUPTIONS IN SEARCH (HEALTH)

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**Brand Medicine International** is a Sydney-based start-up pioneering #SearchListeningHealth, #SearchListeningOptimisation and #SearchChatOptimisation

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