

# LIGHT/KEY



Medical UK Edition



## Contents

- Introduction to Lightkey Medical
- What is Word Prediction / Text Prediction?
- What is Spelling and Grammar correction?
- Medical Fields Included
- Core Differences between Lightkey and Lightkey Medical
- Accessibility Features
- Data Privacy and Security

## Introduction to Lightkey Medical

Lightkey Medical is an advanced predictive text software specifically designed for healthcare professionals. Equipped with 27 specialised medical vocabularies, it streamlines the documentation process by predicting complex medical terminology and offering real-time spelling and grammar corrections.

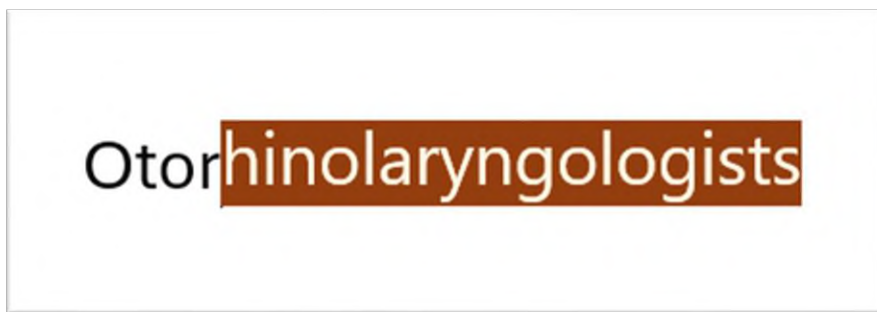
By significantly reducing the time spent on writing and administrative tasks, Lightkey Medical empowers healthcare workers to focus on what truly matters—delivering high-quality patient care. Tailored for the fast-paced demands of medical environments, Lightkey Medical ensures that clinical documentation is accurate, efficient, and effortless.

At the core of Lightkey Medical’s vision is the belief that technology, when intelligently applied, can streamline operations, improve accuracy, and ultimately lead to better patient outcomes.

## What is Word Prediction / Text Prediction?

Word prediction is a technology designed to assist users in writing by suggesting words or phrases as they type. It enhances typing speed, accuracy, and convenience, making it especially beneficial for individuals with disabilities, language learners, or those typing complex terminology.

The underlying principle of word prediction is to anticipate what the user intends to write based on the context of the text already typed. As a person enters letters or words, the system analyses this input and provides possible completions or suggestions. The user can then select the desired word, reducing the need to type the entire word manually.



**How Word Prediction Works:** Word prediction systems leverage algorithms, often powered by artificial intelligence (AI) and machine learning, to predict the next word in a sequence. These algorithms use various factors, including:

- **Contextual analysis:** The system examines the sentence structure and previously typed words to suggest relevant options.
- **Frequency of use:** It prioritises words or phrases that are commonly used by the individual or in general language.

- **Linguistic models:** AI-based models like natural language processing (NLP) help improve prediction by understanding grammar and sentence patterns.

#### **Applications of Word Prediction:**

- **Accessibility:** Word prediction is widely used in assistive technologies to support individuals with physical or cognitive impairments, such as those with dyslexia or motor disabilities.
- **Writing and Documentation:** Writers and professionals use word prediction tools to draft texts faster and with fewer spelling or grammatical errors.

In conclusion, word prediction simplifies and accelerates the typing process by offering intelligent suggestions, saving time, and improving overall writing efficiency.

### **What is Spelling and Grammar correction?**

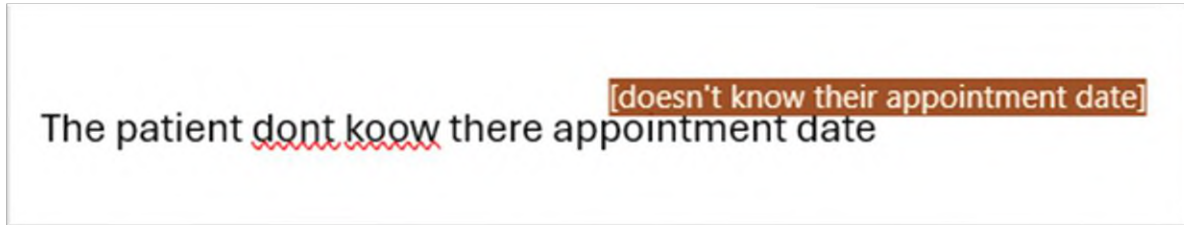
Spelling and grammar correction software is a type of digital tool designed to help users identify and correct errors in written text. It analyses written content for mistakes related to spelling, grammar and sentence structure, providing real-time suggestions for improvement. These tools are used across various platforms, including word processors, email applications, and messaging systems, to ensure more polished and professional communication.



#### **Key Features:**

1. **Spelling Correction:** The software scans the text for misspelled words and suggests correct alternatives. It typically uses a built-in dictionary to cross-reference words and flag incorrect spellings. Advanced systems can also detect context-based spelling mistakes, where a word is spelled correctly but used incorrectly (e.g., "their" instead of "there").
2. **Grammar Correction:** Grammar correction tools check for issues such as subject-verb agreement, proper tense usage, sentence fragments, and word order. They help users write sentences that are grammatically sound, enhancing the readability and clarity of the text.

3. **Contextual Awareness:** Modern spelling and grammar correction software incorporates machine learning and natural language processing (NLP) to better understand the context of the writing. This allows it to offer more accurate corrections and suggestions, even for complex sentences or unusual word usage.



### Benefits of Spelling and Grammar Correction Software:

- **Improved Writing Quality:** These tools help users produce error-free, professional text, whether in formal writing (like reports) or everyday communication (such as emails).
- **Efficiency and Speed:** By automatically identifying and correcting errors, the software speeds up the writing and editing process, saving users time.
- **Learning Aid:** For language learners or those unfamiliar with certain writing rules, grammar correction software acts as an educational tool, explaining mistakes and providing examples of proper usage.
- **Consistency:** It ensures consistency in writing style, tone, and error-free language across different documents or messages.

### Medical Fields Included

Lightkey Medical UK contains 27 advanced medical dictionaries for predictive typing and spelling correction.

Allergy and Immunology	General Medicine	Ophthalmology
Anaesthesiology	Geriatric Medicine	Orthopaedics
Cardiology	Internal Medicine	Osteopathy
Dentistry	Mental Health	Paediatrics
Dermatology	Neurology	Pain Medicine
Emergency Medicine	Neurosurgery	Pathology
ENT	Nursing	Radiology
Epidemiology	Obstetrics and Gynaecology	Sleep Lab
Family Medicine	Oncology	Surgery

Topics Summary -

- **Allergy and Immunology:** Focuses on diagnosing and treating allergic reactions and immune system disorders.

- **General Medicine:** Deals with the comprehensive management of a wide range of common health conditions.
- **Ophthalmology:** Specialises in the diagnosis and treatment of eye diseases and visual impairments.
- **Anaesthesiology:** Concerned with pain relief and the administration of anesthesia during surgeries or procedures.
- **Geriatric Medicine:** Focuses on the health care and treatment of elderly patients, addressing age-related conditions.
- **Orthopaedics:** Specialises in the diagnosis and treatment of musculoskeletal system disorders, including bones, joints, and muscles.
- **Cardiology:** Focuses on the diagnosis and treatment of heart and cardiovascular system conditions.
- **Internal Medicine:** Provides primary care focused on diagnosing and treating a broad spectrum of adult diseases.
- **Osteopathy:** Emphasises holistic care and manual manipulation to treat musculoskeletal and systemic health issues.
- **Dentistry:** Involves the diagnosis, prevention, and treatment of oral health conditions, including teeth, gums, and mouth.
- **Mental Health:** Focuses on the diagnosis and treatment of emotional, psychological, and psychiatric disorders.
- **Paediatrics:** Specialises in the medical care of infants, children, and adolescents, addressing developmental and health issues.
- **Dermatology:** Concerned with the diagnosis and treatment of skin, hair, and nail disorders.
- **Neurology:** Focuses on diagnosing and treating disorders of the brain, spinal cord, and nervous system.
- **Pain Medicine:** Specialises in the diagnosis and management of chronic and acute pain conditions.
- **Emergency Medicine:** Provides immediate diagnosis and treatment of urgent and life-threatening medical conditions.
- **Neurosurgery:** Involves surgical interventions to treat disorders of the brain, spinal cord, and nervous system.
- **Pathology:** Specialises in the study and diagnosis of disease through the examination of tissues, cells, and body fluids.
- **ENT (Ear, Nose, and Throat):** Focuses on the diagnosis and treatment of disorders related to the ear, nose, throat, and neck.
- **Nursing:** Involves the care, treatment, and management of patients in various healthcare settings.
- **Radiology:** Utilises imaging techniques, such as X-rays and MRIs, to diagnose and monitor diseases and injuries.
- **Epidemiology:** Studies the distribution and determinants of diseases in populations to control health problems.
- **Obstetrics and Gynaecology:** Specialises in women's health, including pregnancy, childbirth, and reproductive system disorders.
- **Sleep Lab:** Focuses on diagnosing and treating sleep disorders, such as sleep apnea or insomnia, through sleep studies.
- **Family Medicine:** Provides comprehensive primary care for individuals and families across all ages, genders, and conditions.

- **Oncology:** Specialises in the diagnosis and treatment of cancer, including chemotherapy, radiation, and surgical interventions.
- **Surgery:** Involves performing operative procedures to treat diseases, injuries, or deformities.

## Difference between Lightkey and Lightkey Medical

Lightkey Medical is a specialised edition of the popular Lightkey Assistive Technology (AT), designed specifically for medical professionals and students. While both versions offer powerful predictive text and writing assistance, Lightkey Medical provides a far more tailored experience for those in the healthcare field, setting it apart with several key advantages.

**Lightkey Pro vs Medical UK**  
Out-of-the-box benchmarks

**Pro predicted 24.22% of text whereas Medical UK predicted 55.23% of text**

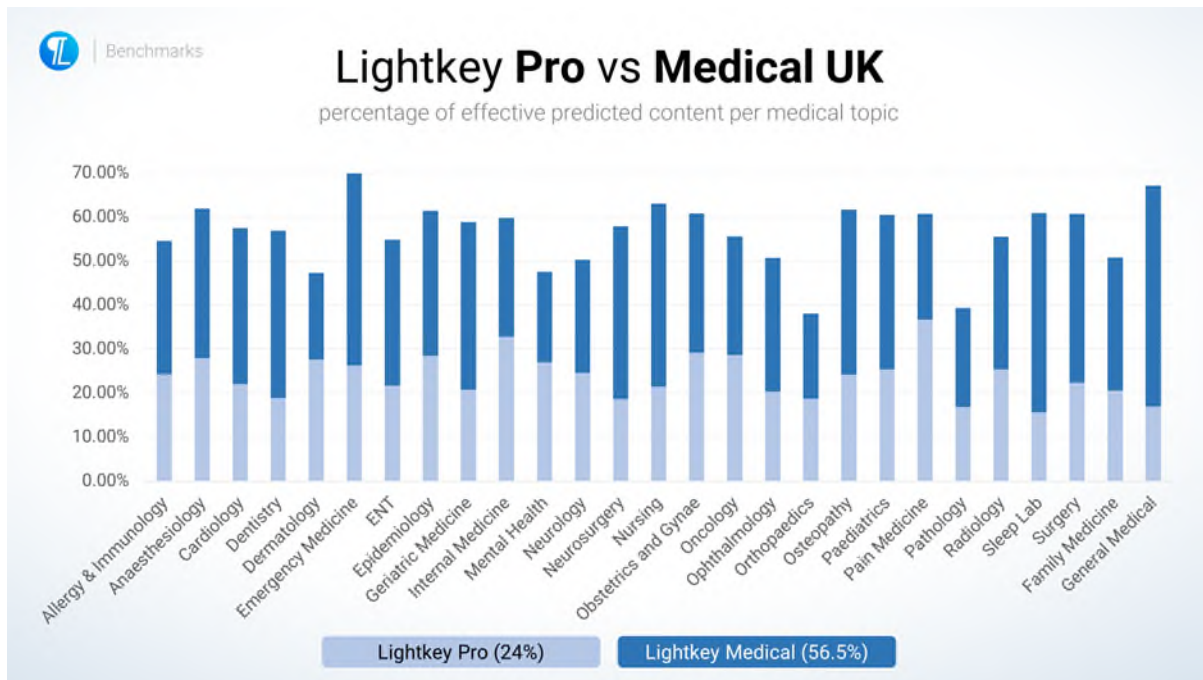
Both commensal bacteria in the mouth and upper intestinal tract It has long been recognized that insulin resistance and development of type 2 diabetes are characterized by systemic and adipose inflammation 19, 28 The lipopolysaccharides produced in the intestine due to the lysis of Gram-negative bacteria triggers proinflammatory cytokines that result in insulin resistance both in mice 5 and humans 29 A more causal role was defined when germ-free mice were colonized with E. coli, as this promoted macrophage accumulation and up-regulation of proinflammatory cytokines resulting in low-grade inflammation 30 The mechanism via which LPS is translocated into the plasma might be either indirectly via indirect transport via dietary chylomicrons 31 or directly via leakage due to a decreased intestinal barrier function 5 Taken together with the MGWAS studies, these data suggest that altered gut microbiota composition may affect the host metabolism via impaired intestinal barrier function resulting in low-grade endotoxemia Altered short chain fatty acid-producing bacteria in obesity and insulin resistance Earlier human studies had already reported that obese subjects have altered faecal SCFA levels which were linked to impaired epithelial intestinal barrier function 32 Thus, the previous reported MGWAS association of T2DM with impaired butyrate production is of interest, as oral supplementation with butyrate can reverse insulin resistance in dietary-obese mice 33 and increase energy expenditure 34, and we are currently performing such a study in human subjects with metabolic syndrome at our institution Moreover, as germ-free mice produce almost no SCFA 35, this suggests a direct pathophysiological mechanism between intestinal microbiota composition, bacterial SCFA in the intestine and development of insulin resistance It has long been recognized that intestinal bacteria release short chain fatty acids, peroxidases, proteases and bacteriocins to prevent pathogens from settling in the intestine 36 The main substrate available to the intestinal bacteria for this process is indigestible dietary carbohydrates, specifically dietary starches and fibres which are broken down into SCFAs 32 These SCFAs may serve as an energy source for intestinal epithelium and liver, given their transport predominantly via the portal vein after intestinal absorption Other observations suggest that the signalling properties of the altered SCFAs may be more responsible for the metabolic effects of the obesity-associated microbiota than their caloric content For example, SCFAs signal through several G-protein coupled receptors, including GPR-41 and GPR-43 37 Moreover, mice lacking GPR 41 have lower recovery of dietary SCFAs 38, suggestive of a reciprocal mechanism

Blue text was predicted by Lightkey Pro AT

Green text was predicted by Medical UK

**Specialised for Medical Use** Lightkey Medical is built around an advanced medical lexicon covering **27 specialised topics**, making it ideal for healthcare professionals who regularly engage with complex medical terminology. This pre-trained vocabulary allows users to access industry-specific terms quickly and accurately, reducing the time spent typing and improving workflow efficiency. In contrast, Lightkey AT offers broader predictive capabilities but lacks the deep specialisation required for medical environments.

**Enhanced Prediction Accuracy** One of the key differences between Lightkey Medical and Lightkey AT is prediction accuracy in medical contexts. Lightkey Medical offers a remarkable **60% effective prediction rate** for medical terminology, compared to the **25% effective prediction rate** of Lightkey AT. This significant improvement means that users of Lightkey Medical benefit from more accurate and relevant predictions, resulting in faster and more efficient documentation.



**Compliance and Contextual Learning** While Lightkey AT is designed to adapt and learn from the user’s vocabulary, jargon, and writing style, **Lightkey Medical goes a step further.** It not only personalises predictions based on your writing habits but also prioritises compliance by favouring medically accurate vocabulary. The **AI in Lightkey Medical** is specifically trained to maintain professional standards, ensuring that the predictions align with clinical accuracy, which is crucial for maintaining consistency and compliance in medical documentation.

In short, Lightkey Medical provides a more specialised, accurate, and reliable writing experience for healthcare professionals. It is built to meet the demands of medical environments, offering enhanced prediction rates and compliance-driven AI that gives you the confidence to write quickly and accurately, while staying aligned with industry standards.

## **Accessibility Features**

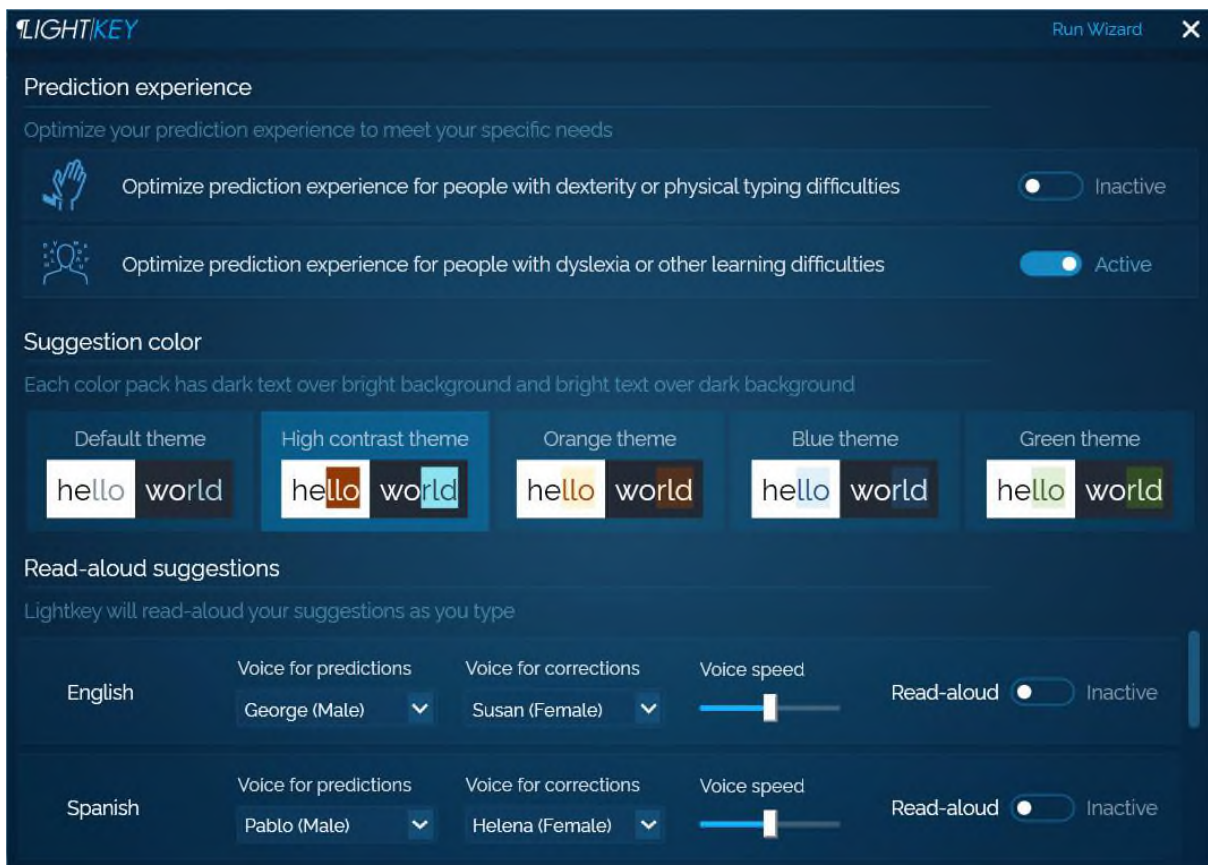
At Lightkey Medical, we are dedicated to making healthcare technology accessible to all users, including those with disabilities. We have integrated a wide range of accessibility features to ensure that individuals with visual, physical, and cognitive impairments can benefit from our solutions. By collaborating with experts and organizations like the **Thomas Pocklington Trust**, we have tailored our software to address specific needs, ensuring that our platform is inclusive, user-friendly, and empowering for all.

**Screen Reader Compatibility** Lightkey Medical is fully compatible with popular screen readers, including **JAWS (Job Access With Speech)**, **Windows Narrator**, and **NVDA (NonVisual Desktop Access)**. These screen readers provide essential audio feedback, allowing users with visual impairments to navigate the software and access vital medical information without barriers. Our seamless integration with these technologies ensures that visually impaired users

can efficiently interact with Lightkey Medical, receiving real-time auditory cues for everything they need to access.

**Customisable Colour Highlights for Low Vision and Colour Blindness** To support users with **low vision** or **colour blindness**, Lightkey Medical offers multiple customisable colour schemes, developed in collaboration with the Thomas Pocklington Trust. These include:

- **High Contrast Mode:** Optimised for users with low vision, this mode enhances contrast between text and background, making it easier to read and interact with content.
- **Discreet Default Mode:** A subtle, non-intrusive background colour designed to minimize distractions while maintaining visibility.
- **Orange, Green, and Blue Modes:** These colour options specifically support individuals who experience **eye strain** or have **colour vision deficiencies**, ensuring that they can choose a display that best suits their needs. By offering these options, we reduce visual fatigue and create a more comfortable user experience for everyone.



**Optimised Typing Prediction for Physical Disabilities** Lightkey Medical is optimised for users with **physical disabilities**, making typing and text entry faster and more accessible. The software reduces the number of keystrokes required before a text prediction is offered, allowing users to complete words and sentences with minimal effort. This is particularly beneficial for individuals with motor impairments or conditions like **cerebral palsy** or **muscular dystrophy**, who may have difficulty with precise or prolonged typing.



**Enhanced Support for Dyslexic Users** We have designed Lightkey Medical with special features to support users with **dyslexia** and other **learning disabilities**. The software provides **smart spelling corrections** that adapt to individual typing habits, reducing common spelling errors and helping users write more confidently. In addition, our colour-coded highlights offer a visual aid for recognising and correcting mistakes, making it easier for dyslexic users to spot and address errors without disrupting their writing flow.

**Commitment to Continuous Improvement** At Lightkey Medical, we recognise that accessibility is an ongoing journey, not a destination. We are committed to continually improving and expanding our accessibility features to ensure that every user, regardless of their abilities, can fully benefit from our technology. Our partnership with accessibility experts and organisations like the Thomas Pocklington Trust and Aventido helps us stay ahead of emerging needs and ensure that Lightkey Medical remains a leader in providing inclusive, barrier-free solutions in the healthcare space.

In summary, Lightkey Medical's comprehensive accessibility features—from screen reader compatibility and customisable colour highlights to optimized typing prediction and dyslexia-friendly tools—demonstrate our commitment to making healthcare technology universally accessible. We believe that everyone deserves the opportunity to engage with medical information and tools in a way that works best for them, and we are proud to offer a platform that reflects this belief.

More Information –

<https://www.pocklington.org.uk/news/tech-collaboration-accessibility-features-lightkey/>

<https://www.lightkey.io/at-edition>

## **Data Privacy and Security**

At Lightkey, we understand the critical importance of data privacy, especially within medical and healthcare settings such as the **NHS**. Protecting sensitive patient information and ensuring compliance with data privacy regulations are fundamental to our approach in developing and deploying Lightkey Medical. Designed with robust security measures and a commitment to safeguarding user data, Lightkey Medical provides a reliable solution that prioritises privacy at every level.

**Local Processing for Maximum Security** One of the key features of Lightkey Medical is that all predictions and text processing occur **locally** on the user's device. This means that no data—whether it's typed text, predictions, or user-specific preferences—is transmitted to external servers or the cloud. For healthcare environments like the NHS, where patient confidentiality is paramount, this local processing ensures that **no patient data or sensitive information ever leaves the device**. This approach significantly reduces the risk of unauthorised access or data breaches, ensuring compliance with strict privacy standards.

**Compliance with NHS Data Security Standards** Lightkey Medical is designed with NHS guidelines and the **UK General Data Protection Regulation (GDPR)** in mind. These standards

demand stringent controls over how patient data is managed and processed. By keeping all data processing on-device, Lightkey Medical supports healthcare professionals in meeting these critical compliance requirements, ensuring that the use of the software aligns with NHS policies and protects patient confidentiality at all times.

**No Third-Party Data Sharing** Lightkey Medical does **not share any data** with third-party vendors or external services. This guarantees that your sensitive information, including medical terminology, patient records, and personal data, is kept entirely private and secure. This is especially important in medical environments where external sharing could pose serious risks to patient privacy and data security.

**User-Controlled Data** Lightkey Medical allows users complete control over their personal data. As part of our commitment to privacy, users can adjust privacy settings and manage how the software learns and adapts to their writing style. Importantly, Lightkey Medical's learning model is fully customisable, and users can delete learned data at any time, ensuring that no residual information is stored unnecessarily on their device.

**No Internet Access Required** Unlike many cloud-based services, Lightkey Medical functions entirely offline, eliminating any potential risk associated with online data transmission. For NHS sites or other medical environments where network security is a top priority, this means that using Lightkey Medical adds **no additional vulnerabilities** to existing IT systems or patient data infrastructures.

**Security Audits and Updates** Lightkey continuously conducts **security audits** and provides regular updates to ensure that its software remains compliant with evolving healthcare regulations and cybersecurity best practices. This commitment to security ensures that NHS and medical users of Lightkey Medical can trust that their software is not only functional but also safe from emerging threats.

**In Conclusion** Lightkey Medical is built with **data privacy and security** as foundational principles, offering a solution that aligns with the high privacy standards of the NHS and other medical institutions. By ensuring that all data processing occurs locally on the device, avoiding third-party sharing, and adhering to UK GDPR and NHS data protection standards, Lightkey Medical provides healthcare professionals with a secure and compliant tool to improve their workflow without compromising patient confidentiality.

More information - <https://www.lightkey.io/privacy-policy>