LAW REFORM COMMISSION

Issue Paper on « Legibility of medical prescriptions and minimisation of medication errors »

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EXECUTIVE SUMMARY

Issue Paper on "Legibility of medical prescriptions and minimisation of medication errors"

[LRC_R&P 173, November 2023]

The healthcare sector stands as one of the critical pillars in a nation's infrastructure, with medical prescriptions representing a significant facet of this domain. This Issue Paper unravels the complexities embedded in the current medical prescription landscape, spotlighting the pervasive issue of illegible handwriting among doctors - a concern that potentially harbours serious ramifications for patient safety and healthcare efficacy. Currently, the Mauritian legal system does not appropriately address this concern.

This Issue Paper reviews the existing laws in Mauritius pertaining to medical prescriptions and also considers the provisions regarding medical prescriptions across several other jurisdictions - including the United Kingdom, New Zealand, Norway, and Seychelles - offering a comparative analysis of the prevailing prescription practices and the respective regulatory frameworks governing them. The scrutiny reveals a marked shift towards digitalisation in several nations, an endeavour that not only promises to mitigate the risks associated with illegible prescriptions but also augments the overall efficiency and accuracy of the healthcare system.

In a notable revelation, Norway emerges as a vanguard in the e-prescription sphere, having successfully implemented a system that curtails errors and facilitates a seamless flow of information between healthcare providers and pharmacies. Other countries are following in those steps as well. This Issue Paper undertakes a comprehensive analysis of the prevailing regulatory frameworks and practices concerning medical prescriptions in the aforementioned jurisdictions. Through a detailed comparative study, it identifies the strengths and pitfalls of each approach, thereby paving the way for informed and nuanced recommendations.

To foster a smooth transition to electronic prescriptions and mitigate the issues stemming from illegible doctor handwriting, this Issue Paper proposes legislative amendments, geared towards streamlining the prescription process and enhancing the safety and efficiency of healthcare delivery. Notably, the recommendations underscore the need for a shift to printed prescriptions, a move that promises to curb the challenges associated with illegible handwriting and foster a more robust, efficient, and safe healthcare system.

INTRODUCTION

1. In the crucible of medical practice, the prescription serves as an indispensable artefact; it represents the culmination of the diagnostic process and marks the initiation of a therapeutic regimen. The quintessential paper slip that meanders its way from the doctor's desk to the pharmacist's counter is, for the patient, both a harbinger of relief and a focal point of faith in the healthcare system. Yet, within the confines of this ostensibly simple transaction lies an intricate interplay of semiotics, legality, and technology. The penmanship (or the lack thereof) that characterises handwritten prescriptions is increasingly under scrutiny, particularly within the context of Mauritius - a society wherein healthcare is a multifaceted construct straddling legacy systems and emergent technologies.

2. Handwritten prescriptions, while steeped in tradition, bear the onerous burden of illegibility, ambiguity, and susceptibility to fraud—a troika of issues that have profound ramifications for patient safety, legal compliance, and operational efficiency. In an age where healthcare is progressively buttressed by the pillars of informatics and data analytics, the retention of handwritten prescriptions appears anachronistic, an obstinate resistance to modernity that could potentially be dangerous. The question, therefore, that must be asked is whether handwritten prescriptions serve as an inadvertent reliquary of inefficiency and risk within an otherwise progressively modern Mauritian healthcare system.

3. The history of pharmacy originates in the ancient annals of civilisation, tracing back to Mesopotamia's clay tablets around 2400 BCE, where the earliest known prescriptions outlined the crafting of poultices and salves. Combining ingredients as diverse as figs and bat droppings with wine or milk, these records reflected rudimentary medicinal understanding. Simultaneously, India's classical Sanskrit text, the *Sushrata Samhita*, introduced compounded medicines by the 6th century BCE, enshrining the wisdom of Ayurveda.[1]

4. Beyond these historical markers, pharmacy's roots entwine with humanity's age-old exploration of nature's healing potential. Early civilisations began their medicinal journey by deciphering the curative properties of plants. This journey advanced through history,

[1] Texas Tech University, Health Sciences Centre: "*The History of Pharmacy*". Available at: <https://www.ttuhsc.edu/pharmacy/museum/pharmacy.history.aspx>

giving rise to apothecary guilds in the 17th century Western world, evolving into the modern role of pharmacists. The 20th century brought shifts, emphasising product safety and dispensing with the passage of the 1951 Durham-Humphrey Amendment in the USA.[2] Yet, the tide turned in the 1980s, catalysing a movement that reclaimed pharmacists' clinical significance, culminating in the Medicare Prescription Drug Improvement and Modernisation Act of 2003, which reinstated their significant role in patient care. Through clay tablets and classical wisdom to contemporary prescriptions, pharmacy's narrative continues, tethered to humanity's pursuit of health and well-being.[3]

5. A medical prescription can be defined as a written directive encompassing comprehensive instructions for administering a medication: the specific drug, formulation, dose, route, timing, frequency, and duration. In essence, a prescription bridges medical expertise with patient care, ensuring the seamless translation of healthcare intentions into actionable guidelines. However, the pivotal role of a prescription also makes it susceptible to errors that can disrupt this carefully orchestrated harmony. These errors, known as prescribing faults, entail deviations from the normative prescription standards, bearing the potential to compromise patient well-being. Such faults encompass misinterpretations or inaccuracies in essential prescription components, creating a vulnerability that might expose patients to inadequate or inappropriate treatments.[4]

6. An unsettling contributor to prescribing faults, and thus the broader landscape of patient safety, is the issue of doctors' illegible handwriting. Doctors' distinctive script, while often caricatured humorously, assumes serious significance when transposed onto prescriptions. Illegible handwriting can metamorphose well-intentioned prescriptions into enigmatic puzzles, confounding pharmacists, nurses, and patients alike. This transformation from medical instruction to cryptic script poses dire consequences, as vital details can be misread, misunderstood, or misinterpreted. The fundamental tenets of a prescription—accurate drug identification, proper dosing, and appropriate administration—teeter on the precipice of

[2] Several amendments were introduced to the Federal Food, Drug, and Cosmetic Act (FDCA) in order to alter the rules and supervision of the Federal Drug Administration (FDA). The Durham-Humphrey Amendment was established to oversee the usage of unsafe medications without medical supervision, differentiating between drugs available over-the-counter and those requiring a prescription.
[3] *Ibid*
[4] J.K. Aronson, "Medication Errors, Definitions and Classification" (British Journal of Clinical Pharmacology, 2009). Available at:
https://pubmed.ncbi.nlm.nih.gov/19594526/#:~:text=A%20prescription%20error%20is%20'a,normal%20features%20of%20a%20prescription'.

ambiguity when doctors' handwriting becomes a barrier to clarity. In this context, the issue transcends mere aesthetics; it imperils patient safety by impeding the efficient and accurate translation of medical expertise into effective care. Consequently, the interface between doctors' handwriting and the integrity of prescriptions underscores a critical realm where improvement is not only desirable but indispensable to avert potential harm.

7. Molière used satire to mock how doctors had a strong tendency to write prescriptions in confusing Latin, a habit that hid medical directions behind a curtain of hard-to-understand language, making it possible to grasp only for people in the medical field. This clever commentary, exemplified in plays such as *Le Médecin malgré lui* unravelled the paradox of doctors communicating vital health directives through a language intentionally arcane and inaccessible to the very patients they aimed to treat. Molière's artful portrayal exposed the inherent absurdity of relying on obscure language as a barrier, contrasting the noble mission of healthcare with the barriers posed by incomprehensible medical discourse, thus inviting both laughter and reflection on the role of communication in medicine.

8. A distressing incident in the United States serves as a poignant illustration of the repercussions stemming from doctors' illegible handwriting. In this case, a doctor found faced a significant financial penalty of $225,000 due to a grave consequence resulting from a prescription misinterpretation. The prescription, which intended a dose of 20 mg of *Isordil* (isosorbide dinitrate), was tragically misconstrued by a pharmacist as *Plendil* (felodipine), a calcium antagonist typically prescribed for high blood pressure. The pharmacist's misreading led to an overdose of felodipine over a span of 6 days, resulting in a patient's tragic demise due to a heart attack. The court, in evaluating the situation, did not question the doctor's professionalism or attentiveness to the patient's well-being. Instead, the judge squarely attributed the tragedy to the prescription's illegibility. Notably, the pharmacist also bore consequences, facing a comparable fine for their role in the mishap.[5]

9. The practice of hastily recording drug orders invites disaster, as unclear prescriptions become fertile ground for misunderstandings. These shortcuts become a legal liability, leaving both practitioners and pharmacists to decipher cryptic instructions, often resorting to educated guesses. This situation is exacerbated in emergency scenarios, intensifying risks

[5] F. Charatan "Compensation awarded for death after illegible prescription" West J Med. 2000 Feb; 172(2): 80. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1070756/

for patients. Hospitals, acknowledging the gravity, have imposed mandates: if orders are indecipherable, physicians must be consulted for clear rewrites, as ambiguity in drug directives is an unacceptable risk. The gravity of the issue is underscored by the Institute of Safe Medication Practices, advocating for the abandonment of handwritten orders.[6]

10. In this context, many countries have opted for the digitalisation of their healthcare system and, subsequently, implementing e-Prescription in their health sector in order to avoid mishaps in issuing medical prescriptions. The emergence of electronic prescription systems stands as a crucial stride towards enhancing patient safety and mitigating the complexities entrenched in traditional paper-based prescription methods. The significance of this shift is underscored by the challenges posed by handwritten prescriptions, which are susceptible to misinterpretation and potentially dire consequences. Electronic prescriptions not only streamline the communication between healthcare providers and pharmacies but also alleviate the burden of deciphering illegible handwriting, a notorious hurdle in the realm of patient care as above-mentioned. The transition to electronic systems promises a marked reduction in medication errors and adverse drug events, bolstering the efficacy of healthcare delivery and safeguarding patient well-being.[7]

11. Amid the contemporary healthcare landscape, marked by technological advancements and a growing emphasis on patient-centred care, the adoption of electronic prescription systems assumes paramount importance. Beyond the enhancement of prescription accuracy, these systems offer real-time access to patient medical histories, drug interactions, and allergy information, enabling informed decision-making by healthcare practitioners. The electronic format also enables seamless collaboration between medical professionals, pharmacists, and patients, fostering a comprehensive approach to treatment. Moreover, the ongoing global COVID-19 pandemic has accentuated the need for contactless processes, where electronic prescriptions emerge as a viable solution to minimise physical interactions while upholding the quality of care. As the healthcare community continues to navigate complexities, the embrace of e-prescribing emerges as a transformative step, exemplifying a commitment to patient safety, efficient communication, and the harnessing of technology for the betterment of healthcare delivery.[8]

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[6] Cohen MR, Smetzer JL. ISMP Medication Error Report Analysis
[7] Nuckols TK, Smith-Spangler C, Morton SC, Asch SM, Patel VM, Anderson LJ, Deichsel EL, Shekelle PG: "*The effectiveness of computerized order entry at reducing preventable adverse drug events and medication errors in hospital settings: a systematic review and meta-analysis.*". Available at: https://pubmed.ncbi.nlm.nih.gov/24894078/
[8] *Ibid*

12. It is, therefore, imperative for Mauritius to consider alternatives to handwritten medical prescriptions and to proactively address this issue by considering the integration of electronic prescription systems into its legislative framework. Embracing electronic prescriptions would usher in a new era of accuracy and efficiency in healthcare delivery. By transitioning to electronic systems, Mauritius can circumvent the pitfalls of misinterpretation, reduce the incidence of medication errors, and enhance patient outcomes. Moreover, the global trend towards digitalisation in healthcare, accentuated by the COVID-19 pandemic, emphasises the timeliness and relevance of adopting electronic prescription systems to ensure the highest standards of patient care while aligning with the evolving landscape of modern healthcare practices.

13. Thus, this Issue Paper will undertake to examine the following:
    (a) Studies undertaken on handwriting legibility and medication errors;
    (b) The current laws in Mauritius regarding handwritten prescription;
    (c) Medical prescriptions and forgery;
    (d) Reforms undertaken on handwritten medical prescriptions in Norway, the United Kingdom, France, New Zealand and Seychelles; and
    (e) Analysis and recommendations.

A. STUDIES UNDERTAKEN ON HANDWRITING LEGIBILITY AND MEDICATION ERRORS

14. The need for meticulous documentation transcends the domain of administrative protocol and delves into the realm of public well-being. Errors induced by handwritten prescriptions implicate not only the physician but also the pharmacist and the healthcare institution at large, introducing an unnecessary variable in a field where certainty is of the essence.

15. A striking illustration of the long-standing concern over doctors' poor handwriting can be found in an editorial from a century ago, published in *The Lancet* in January 1915 (a world-leading general medical journal). The editorial sharply criticised the deplorable state of handwriting, featuring a reproduction of what was described as "the most atrociously illegible prescription ever seen". This prescription was not only a visual challenge but also a point of contention due to the arbitrary and potentially hazardous manner in which it was interpreted by the pharmacist. The editorial's verdict on such cases was unequivocal: "unless there may be an understanding or private code between the prescriber and the pharmacist, the only thing that could be said of this prescription is that the doctor who wrote it should have been ashamed of themselves". This historic anecdote serves as a poignant reminder that the repercussions of illegible handwriting have long been recognised, warranting not only the evolution of healthcare practices but also a steadfast commitment to clear and precise medical communication.

16. Contrary to common belief, studies reveal that poor handwriting isn't exclusive to doctors. A comprehensive study examined the relationship between prescribers' handwriting legibility and drug errors. It found that non-medical participants accurately transcribed only 45% of lower-case prescriptions, compared to 66.5% for upper-case ones. Similar trends were seen among junior doctors, indicating that legibility significantly impacts transcription accuracy. Thus, maintaining legibility becomes a shared responsibility among healthcare providers to minimise preventable drug errors.[9]

17. The study's implications emphasise the importance of legibility in prescription writing. To address this concern, the adoption of upper-case letters is advocated as a routine practice for

[9] R. Fallaize, G. Dovey and S. Woolf: "*Prescription legibility: bigger might actually be better*" Postgrad Med J. 2018 Nov;94(1117):617-620. Available at: https://academic.oup.com/pmj/article/94/1117/617/6959054?login=false

drug prescriptions. This proactive approach is expected to improve transcription accuracy and minimise errors, ultimately safeguarding patient well-being. The study underscores the need for collaborative efforts within the medical community to prioritise clear documentation practices, potentially leading to standardised approaches that revolutionise prescription writing for the better.[10]

18. In another study, hand-written prescriptions were compared to electronic prescriptions. The study examined prescriptions from various clinical units and electronic sources, comparing handwritten and electronic prescriptions. Among 398 assessed prescriptions (199 each), handwritten prescriptions showed a significant prevalence of errors (35.7%), notably in omitted doses and routes of administration. Electronic prescriptions, on the other hand, demonstrated a remarkably lower error rate (2.5%).[11]

19. In light of these findings, the study highlights the substantial occurrence of errors in handwritten prescriptions and suggests that transitioning to electronic prescriptions could effectively reduce error incidences. While handwritten prescriptions displayed acceptable legibility, their completeness levels were notably low. These insights emphasise the potential advantages of implementing electronic prescriptions, ensuring clearer and more comprehensive medication instructions, and ultimately enhancing patient safety.[12]

20. Observations from the first study shed light on the critical role of legibility in medical prescription writing and its impact on patient safety. Contrary to prevailing assumptions, the study underlines that subpar handwriting isn't solely a characteristic of doctors, but a widespread issue. The research conducted an in-depth analysis of prescribers' handwriting legibility and its connection to medication errors. The study revealed a notable discrepancy in transcription accuracy. Consequently, the responsibility to ensure legibility emerges as a collective commitment among healthcare providers to mitigate the risk of avoidable medication errors.

21. Furthermore, another study probed the contrasting effectiveness of handwritten and electronic prescriptions. The investigation encompassed various clinical units and electronic

[10] *Ibid*
[11] A.I.Albarrak, E.A. Al Rashidi, R.K. Fatani, S.I. Al Ageel, R. Mohammed: "*Assessment of legibility and completeness of handwritten and electronic prescriptions*" Saudi Pharmaceutical Journal, Volume 22, Issue 6, 2014. Available at: https://www.sciencedirect.com/science/article/pii/S1319016414000267
[12] *Ibid*

sources, with an examination of 398 prescriptions split evenly between handwritten and electronic formats. The findings unveiled a significant disparity in error prevalence, with handwritten prescriptions exhibiting a substantial 35.7% error rate, particularly concerning omitted dosages and administration routes. In stark contrast, electronic prescriptions demonstrated an impressively low error rate of 2.5%. These results emphasise the pressing need to address the shortcomings of handwritten prescriptions and advocate for the adoption of electronic prescriptions as a means to substantially diminish error occurrences.

B. CURRENT LAWS IN MAURITIUS CONCERNING HANDWRITTEN MEDICAL PRESCRIPTION

22. The healthcare domain in Mauritius encompasses both public and private establishments, with an array of laws governing its operations. These legislations include the Civil Code, the Public Health Act, the Medical Council Act, the Pharmacy Act, and additional legislations that collectively shape the landscape of the health sector.

23. In Mauritius, the regulation of medical prescriptions falls under the purview of the Pharmacy Act 1983, which mandates that each prescription must be manually written, dated, and endorsed by an authorised individual (as stipulated in Section 21(3) of the Pharmacy Act). The prescription is required to encompass essential details, including the address of the endorsing authorised person, the patient's name and address, along with comprehensive information. This encompasses not only the medication names intended for dispensing, but also encompasses specifics such as the quantity of the medicine, usage instructions, and prescribed dosage.[13]

24. Section 21(1) of the Pharmacy Act outlines that as long as the prescription adheres to the Act's regulations, no Pharmacist or Assistant Pharmacist is allowed to decline the dispensing of a prescription at a pharmacy when payment in cash is offered for any prescribed pharmaceutical product. Nevertheless, should the prescription fail to meet the criteria defined in Section 22 of the Act, the Pharmacist or Assistant Pharmacist is precluded from fulfilling the medication dispensing. Consequently, the Pharmacy Act mandates that the Pharmacist or Assistant Pharmacist assume the responsibility of confirming the legitimacy of a prescription before proceeding with the dispensing of any medication.[14]

25. Under the provisions of the Pharmacy Act 1983, prescriptions generally cannot be dispensed more than once. However, an exception exists if the prescription explicitly states that it can be dispensed multiple times, following a specified interval detailed in the prescription (as mentioned in Section 22 of the Pharmacy Act 1983). Additionally, if the pharmacist or assistant pharmacist identifies a clear mistake or omission in the prescription that could potentially jeopardise the patient's health or life, the execution of the prescription must be

[13] Section 21(3) of the Pharmacy Act 1983
[14] Section 21(1) and section 22 of the Pharmacy Act 1983

paused. The concern should promptly be communicated to the relevant authorised individual for verification, in accordance with Section 21(2) of the Pharmacy Act 1983.[15]

26. Section 20 of the Pharmacy Act provides for the compulsory maintenance of a Prescription Book in pharmacies. This book is to be maintained by either the pharmacist or, in their temporary absence, an assistant pharmacist. The Prescription Book serves as a record where all dispensed prescriptions are entered and documented. This book is required to be preserved in the pharmacy for a period of two years from the date the last prescription was entered, ensuring that a detailed record of prescriptions is maintained over a considerable duration.[16]

27. An individual found breaching the terms laid out in the Pharmacy Act 1983 will be committing a legal violation. If convicted, the person may face a monetary penalty of up to Rs 10,000 and/or be sentenced to a maximum imprisonment period of 2 years.[17]

28. Section 21 delineates the standards and procedures governing the dispensation of prescriptions. It outlines the obligations of pharmacists and assistant pharmacists in fulfilling prescriptions and sets forth the criteria for valid prescriptions, emphasising the necessity of handwritten, signed, and dated prescriptions by authorised personnel. However, the requirement for handwritten prescriptions, as stipulated, presents an opportunity for modernisation.

29. The adoption of e-prescriptions could eradicate the challenges associated with illegible handwriting, thereby reducing the risk of medication errors and enhancing patient safety. Moreover, e-prescriptions would facilitate immediate communication between healthcare providers, enabling swift resolution of any discrepancies or clarifications, as highlighted in subsection 21(2). Another short-term solution would be to have recourse to handwritten prescription so as to eradicate the issue of illegibility, thereby augmenting the accuracy of the prescription process and ultimately ensuring better patient safety.

[15] Section 21(2) and section 22 of the Pharmacy Act 1983
[16] Section 20 of the Pharmacy Act 1983
[17] Section 45(2) of the Pharmacy Act 1983

C. NAVIGATING THE LANDSCAPE OF PRESCRIPTION FORGERY

30. Prescription forgery entails the unlawful procurement or dissemination of prescription drugs through means of falsehood, manipulation, or falsification. This act is classified as a criminal transgression owing to the possible grave repercussions it holds for both public health and the persons implicated.[18]

31. A study was conducted to shed light on the real-world incidence of prescription forgeries in community pharmacies within the Midi-Pyrénées region of southwestern France. Over four distinct phases spanning from September 1991 to June 1993, pharmacy students residing in the area collaborated with various local pharmacies volunteering for the study. They were tasked with meticulously documenting each prescription request that appeared suspicious, utilising specific criteria to identify potential forgeries. These criteria encompassed factors such as inappropriate dosage indications, repeated utilisation of a single prescription form, non-compliance with established prescription rules, and the use of fraudulent prescription forms, which included stolen or photocopied versions.[19]

32. The initiative successfully gathered 165 counterfeit prescriptions over the specified periods. An analysis revealed that these fraudulent prescriptions primarily involved the request of 305 drugs, predominantly consisting of substances such as opiate analgaesics, benzodiazepines, amphetamines, and minor opiate analgaesics. The medications most commonly noted were buprenorphine, flunitrazepam (specifically in 2 mg dosages), phenobarbitone combined with amphetamine, and clorazepate.[20]

33. In India, a Mumbai special court recently sentenced a ward boy at a local cancer speciality hospital, to one year of imprisonment. This verdict came after the ward boy was found guilty of manipulating a patient's prescription in 2008 to illegitimately acquire additional medicines, specifically five vials of *Meronam* injection. The malfeasance was exposed when the patient's father demanded reimbursement for the unauthorised inclusion of the injection

[18] Global Health and Pharma, '' What is Prescription Fraud and its Consequences?" 23 June 2023. Available at: https://www.ghp-news.com/what-is-prescription-fraud-and-its-consequences/
[19] Lapeyre-Mestre, M., Damase-Michel, C., Adams, P. et al. "*Falsified or forged medical prescriptions as an indicator of pharmacodependence: A pilot study. E J Clin Pharmacol 52, 37–39 (1997).*" Available at: https://link.springer.com/article/10.1007/s002280050246#citeas
[20] *Ibid*

on the bill, initiating an investigation spearheaded by the Anti-Corruption Bureau and the CBI based on a complaint from an assistant medical superintendent.[21]

34. Despite the ward boy's assertions of being wrongfully accused due to his previous non-cooperation in a related case, the court deemed the testimonies of the prescribing doctors, the attending nurses, and a handwriting expert as credible evidence against him. The handwriting expert confirmed the alterations on the prescription matched the ward boy's handwriting, substantiating the forgery and fraud charges. While the latter pleaded for a more lenient sentence, citing his role as the family breadwinner and a clean criminal record, the court underscored the seriousness of the crime, particularly exploiting patients seeking critical care, and upheld the one-year prison sentence.[22]

35. Mauritius is also not spared by the issue of forgery of prescriptions. In 2009, a nursing officer at Victoria Hospital was charged with forgery and using a forged document in violation of various sections of the Criminal Code.[23] The charges stemmed from an incident in September 2004 where the individual allegedly fabricated a doctor's signature on a prescription form and used it at the hospital pharmacy, a claim the accused steadfastly denied. The prosecution presented the forged prescription, supposedly signed by a Dr. Mohith for a non-existent patient, Mr. Ramesh Dhoorah. Despite the defence's arguments regarding the classification of the prescription form as a public document, the court determined it to be a public and authenticated writing, enabling an amendment of the charges to accurately represent the nature of the forged document.[24]

36. The case heavily relied on the testimony of handwriting expert, who confirmed the similarity between the handwriting and signature on the prescription form and those of the accused. This testimony was corroborated by the pharmacy dispenser, who identified the accused as the individual who presented the forged prescription. The court found the accused guilty on both counts, emphasising the clear fraudulent intent and potential financial implications for the state. Thus, the accused was convicted for forgery and using a forged public and

[21] The Indian Express: "Mumbai ward boy gets 1 year in jail for tampering with prescription" (2018). Available at: https://indianexpress.com/article/cities/mumbai/mumbai-ward-boy-gets-1-year-in-jail-for-tampering-with-prescription-5070573/
[22] *Ibid*
[23] Sections 108, 111, 112 and 121 of the Criminal Code.
[24] *Police v Mudhoo Mohammud Essan* (2009) INT 55

authenticated writing, underscoring the significance of the surrounding circumstances that led to the inferred fraudulent intention.[25]

37. It was argued, when e-prescription was introduced in the USA, that its utilisation would substantially mitigate the prevalence of prescription fraud by significantly limiting the chances for unauthorised modification of patient details or manipulation of prescription information. Given that these digital prescriptions are directly sent to the pharmacy, the window for potentially fraudulent activities such as alterations or theft of prescription pads becomes practically non-existent. This direct and secure transmission method establishes a nearly foolproof system, ensuring that the pathway from the prescribing doctor to the pharmacy remains untainted and secure, thereby fostering a safer and more reliable environment for the management and distribution of prescription medications. It heralds a new era in medical practice where the integrity of prescriptions is upheld at a much higher standard, thereby promising enhanced safety and security in the healthcare sector.[26]

38. However, as John Conrad once stated that "*the mind of man is capable of anything* ..." and so, one man named Joseph DePalma has been arrested for illegally obtaining 840 oxycodone pills by stealing electronic prescriptions from an Illinois doctor and using fake names to fill them at 14 different CVS locations in Marion County.[27] The Drug Enforcement Agency noted that despite the electronic system's intention to prevent such frauds, DePalma managed to exploit it, highlighting a significant issue with pharmaceutical fraud. Authorities have not disclosed DePalma's plans for the acquired pills, but emphasise that such activities can have severe consequences, including overdoses and the circulation of fake prescriptions.[28]

39. The more so, in British Columbia, Canada, the advent of electronic prescribing software has led to an increase in the use of electronic signatures, a practice that has raised questions about its acceptability and the methods to authenticate these signatures. As per the Pharmacy Operations and Drug Scheduling Act (PODSA) Bylaws, a "signature" on a prescription can either be a traditional handwritten one or an electronic signature. Electronic signatures can

[25] *Ibid*
[26] Therapy Brand, "The Role of Electronic Prescriptions in Halting Opioid Fraud" (2021). Available at: https://therapybrands.com/blog/the-role-of-electronic-prescriptions-in-halting-opioid-fraud/
[27] CVS Pharmacy is one of the largest retail pharmacy chains in the United States, with 9,800 stores located in 49 states, the District of Columbia, and Puerto Rico, operating primarily under the CVS Pharmacy, CVS inside Target, Longs, Navarro and y más stores.
[28] Kailey Schuyler, "Man accused of using fake prescriptions for 800+ oxycodone pills" (Fox59, 08 March 2023). Available at: https://fox59.com/news/indycrime/man-accused-of-using-fake-prescriptions-for-800-oxycodone-pills/

further be categorised into two types: a unique signature created using electronic means like an electronic pen or mouse, which varies with each prescription, and a saved digital image of the practitioner's signature or a secure identifier that is reproducible only by that practitioner. The latter has been a point of concern as it can potentially be misused, making it challenging for registrants to verify the authenticity of a prescription.[29]

40. The uncertainty surrounding electronic signatures necessitates that practitioners exercise a high degree of caution and professional judgment when accepting prescriptions signed electronically. Despite the convenience offered by electronic signatures, they pose a significant risk of forgery. To ensure the authenticity of a prescription, registrants are expected to adopt a meticulous approach, especially when the signature appears as a saved digital image or identifier. In cases of doubt, registrants should not hesitate to contact the prescribing practitioner to confirm the legitimacy of the prescription before dispensing any medication. Documentation of such verification is also crucial. It's important to note that even with the shift towards electronic prescriptions, the issue of fraud still exists, and practitioners must remain vigilant to prevent misuse and ensure patient safety.[30]

41. Undeniably, in any prescription system, the spectre of forgery and fraud looms, presenting a persistent challenge that needs to be continually addressed. Despite this, it is evident that the advent of e-prescriptions has introduced a myriad of benefits that far outweigh the potential drawbacks associated with traditional handwritten prescriptions. This modern approach not only streamlines the medical prescription process but also enhances the accuracy and security of transmitting prescriptions, thereby minimising errors and potential misuse. Moreover, e-prescriptions hold a significant advantage in maintaining a transparent and traceable record, which can be a potent tool in tracking and preventing fraudulent activities. Additionally, they facilitate a more organized and efficient healthcare system, where the risks of illegible handwriting and misunderstandings are virtually eliminated. While it may not completely eradicate the potential for forgery, it certainly erects more robust barriers against such activities, making it a decidedly favourable option in the contemporary healthcare landscape, aiming to secure the wellbeing of patients with increased efficiency and safety.

[29] College of Pharmacists, British Colombia: PRP Insights "Electronic Signatures Clarified" (2020). Available at: https://www.bcpharmacists.org/readlinks/prp-insights-electronic-signatures-clarified
[30] *Ibid*

D. MEDICAL PRESCRIPTION IN OTHER JURISDICTIONS

NORWAY

42. The introduction of electronic prescribing (e-prescribing) has emerged as a transformative solution to mitigate the risks associated with illegible prescriptions. This shift from traditional handwritten prescriptions to electronic transmission and storage of medication orders has revolutionised the prescription process. Nowhere is this transformation more evident than in Norway, where the implementation of e-prescribing has dramatically curbed the longstanding problem of doctors' illegible writings.

43. The establishment of the National Database for Electronic Prescriptions (*Nasjonal database for elektroniske resepter*) marks a pivotal development in Norway's healthcare infrastructure. This database is a central repository that plays a fundamental role in the e-prescription system, facilitating the electronic collection, storage, and processing of prescription information. The legal foundation for this system is rooted in the Personal Health Data Filing System Act, specifically section 8, paragraph 9, which underscores the significance of organised electronic prescription management.[31]

44. The Regulations on the e-Prescriptions Register (*Reseptregisteret*) further outline the operational framework for the e-prescriptions Database. These regulations stipulate that the entire process, from prescription issuance to registration, must occur electronically. This digital approach streamlines the prescription workflow, minimising manual errors, enhancing accuracy, and ensuring efficient access to prescription data for authorised healthcare personnel.[32]

45. For an e-prescription to be generated, it is imperative that the prescriber has access to the e-prescriptions database. This access allows the healthcare professional to seamlessly record the prescription, creating a cohesive and standardised repository of medication orders. The regulations surrounding the processing of medical data within the e-prescriptions Database emphasise the obligation of the requesting party to promptly register prescribed medicines,

[31] Overview of the National laws on electronic health records in the EU member states: National Report for Norway, available at: https://health.ec.europa.eu/system/files/2016-11/laws_norway_en_0.pdf
[32] *Ibid*

medicinal items, or medicinal food products. This registration process enhances traceability, accountability, and patient safety.[33]

46. However, flexibility is integrated into the regulatory framework to accommodate evolving healthcare dynamics. Transitory provisions, such as those outlined in section 8-1 of the Regulations on the e-prescriptions Database, grant the Health Department the authority to grant limited exemptions from the notification requirement for requisitioning medicine. These exemptions are designed to support the transition to e-prescriptions while maintaining a balance between regulatory oversight and practical implementation.[34]

47. It is important to note that while the e-prescriptions Database centralises prescription information, access to individual patient health records remains decentralised. Health care personnel prescribing e-prescriptions must refer to their own local medical records systems, in accordance with the Health Personnel Act. This localised approach ensures compliance with patient record-keeping obligations, promoting patient-specific care while benefiting from the standardised prescription management offered by the e-prescriptions database.[35]

48. With over 90% of prescriptions now transmitted electronically, the country has experienced a significant reduction in prescription errors attributable to illegible handwriting. The centralised Prescription Mediator database plays a pivotal role by storing electronic prescriptions, ensuring accessibility to authorised healthcare professionals. This standardised digital approach has not only improved prescription clarity but has also fostered more efficient collaboration between prescribers and pharmacists.[36]

49. E-prescribing in Norway has ushered in an era of improved patient safety and streamlined healthcare processes. The elimination of illegible prescriptions minimises the potential for misunderstandings and errors, safeguarding patients from receiving incorrect medications or doses. Pharmacists, who often faced the daunting task of deciphering handwritten prescriptions, can now focus on more critical aspects of patient care and medication management.[37]

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[33] *Ibid*
[34] *Ibid*
[35] *Ibid*
[36] Josendal, A.V.; Bergmo, T.S. "*From Paper to E-Prescribing of Multidose Drug Dispensing: A Qualitative Study of Workflow in a Community Care Setting.*" Pharmacy 2021, 9, 41, available at: https://www.mdpi.com/2226-4787/9/1/41#:~:text=In%20Norway%2C%20e%2Dprescribing%20was,per%20year)%20%5B12%5D.
[37] *Ibid*

50. While the transition to e-prescribing presented its own set of challenges, such as changes in workflow and increased communication requirements, the long-term benefits are undeniable. Healthcare professionals are adapting to this digital paradigm, recognising that the benefits of improved accuracy and patient safety far outweigh the initial adjustments required.[38]

51. The implementation of e-prescribing in Norway stands as a shining example of how technology can effectively address the persistent issue of illegible prescriptions. By embracing electronic transmission and storage of medication orders, Norway has demonstrated that enhancing patient safety is not only achievable but essential in modern healthcare systems. As other regions consider adopting e-prescribing, they can draw inspiration from Norway's success story, leveraging technology to overcome long-standing challenges and create a safer and more efficient healthcare environment for all.

THE UNITED KINGDOM

52. In the UK, physicians used to meticulously document individual patients' medical records in handwritten notes, primarily for personal reference. With the advancement of medical practices, the healthcare sector has transformed into a multidisciplinary collaboration, where professionals work hand in hand. This transformation has highlighted the limitations of handwritten notes, often characterised by illegible scrawls hurriedly written by physicians. Not only do these illegible notes necessitate additional time and effort for deciphering, but they can potentially lead to grave errors, including incorrect dosage administration and unnecessary tests, thereby jeopardising patient safety and increasing the probability of legal repercussions. As the UK healthcare system recognises the pressing need to overhaul this antiquated practice, a significant shift towards electronic prescriptions (e-prescriptions) is being observed, promising to mitigate these issues by offering a more legible, efficient, and safer alternative to handwritten prescriptions.[39]

[38] *Ibid*
[39] Sokol DK, Hettige S. Poor handwriting remains a significant problem in medicine. J R Soc Med. 2006 Dec;99(12):645-6. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1676338/

53. In the UK, the legal framework governing medical prescriptions is both extensive and meticulous, encompassing various legislations and regulatory bodies. The cornerstone of this framework is the Human Medicines Regulations 2012, which outlines the basic requisites for prescriptions. Particularly, Regulation 214 insists on prescriptions being issued by appropriate practitioners, thereby establishing a first line of defence against fraudulent or erroneous prescriptions. Regulation 220 further ensures the accountability and authenticity of prescriptions by mandating the signature of the issuing practitioner.

54. Delving deeper into the specifics of the Human Medicines Regulations 2012, Regulation 217 indirectly insists on the necessity for clarity and legibility in prescriptions to prevent misuse and errors in dispensing. Furthermore, the General Pharmaceutical Council (GPhC), a key regulatory body, accentuates the importance of clear and precise prescriptions, actively encouraging practitioners to avoid abbreviations or any form of notation that might lead to confusion, thereby fostering a culture of safety and precision in prescription dispensing.[40]

55. Apart from the central legislations, the operational framework of prescriptions in the UK is guided by supplementary guidelines issued by various authorities. The National Health Service (General Medical Services Contracts) Regulations 2004 and the National Health Service (Pharmaceutical and Local Pharmaceutical Services) Regulations 2013 serve as pivotal documents, outlining the procedural and operational specifics of prescription services within the NHS framework. These legislations work hand in hand to streamline the prescription process, ensuring efficiency and reliability.[41]

56. Moreover, NHS Prescription Services play a vital role in overseeing the implementation of prescription protocols, offering guidance and support to practitioners to adhere to the legislative mandates. In tandem, organisations like the National Institute for Health and Care Excellence (NICE) and the Royal Pharmaceutical Society (RPS) contribute through the issuance of guidelines that focus on ensuring the quality and safety of prescriptions, thereby enhancing the efficacy of the prescription process in the UK.

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[40] The Human Medicines Regulations 2012.
Available at: https://www.legislation.gov.uk/uksi/2012/1916/part/12/made
[41] Health Service (General Medical Services Contracts) Regulations 2004.
Available at: https://www.legislation.gov.uk/uksi/2004/291/contents/made and the National Health Service (Pharmaceutical and Local Pharmaceutical Services) Regulations 2013.
Available at https://www.legislation.gov.uk/uksi/2013/349/contents/made

57. The integration of technology has facilitated the shift from handwritten to computer-generated prescriptions, a change that not only enhances efficiency but also augments the legibility of prescriptions. Therefore, a computer-generated prescription is acceptable, however, the prescriber's signature must be handwritten. This hybrid approach, amalgamating the benefits of technology with the irreplaceable value of a personal signature, underscores a concerted effort to mitigate errors and fraud, whilst maintaining the highest standards of safety and personal touch in patient care.[42]

58. As the UK steers towards modernisation in healthcare, the shift towards electronic prescriptions (e-prescriptions) is perceptible. The legal groundwork for this transition was laid by the Health and Social Care Act 2012, which envisaged the incorporation of digital technology in healthcare, including the facilitation of e-prescriptions. This transition is seen as a vital step in reducing errors associated with illegible handwriting, a prevalent issue in handwritten prescriptions.[43]

59. The Human Medicines Regulations 2012 define the protocols surrounding the creation and distribution of pharmaceuticals, including prescription guidelines. This legal document, complemented by the Medicines Act of 1968, establishes the base for subsequent laws and directives encompassing electronic prescription norms. Additionally, the NHS Act 2006 serves as a crucial legislative piece, encouraging the integration of electronic prescription services within the NHS framework, enhancing both the safety and efficiency of healthcare delivery. Particularly, sections of this act focusing on the innovation in health services have facilitated the inclusion of electronic prescriptions in the NHS's strategy to improve service delivery and safety.

60. Accompanying these central pieces of legislation, a range of regulatory bodies and directives further shape the structure for electronic prescription services in the UK. The National Health Service (Pharmaceutical and Local Pharmaceutical Services) Regulations 2013, for example, detail the contract agreements governing community pharmacies, potentially encompassing stipulations regarding the handling and acceptance of electronic prescriptions. Furthermore, organisations such as the General Pharmaceutical Council (GPhC), the National Institute for Health and Care Excellence (NICE), and the Royal Pharmaceutical Society (RPS) are

[42] NHS, Health Education England: "Legal aspects of prescription writings".
Available at: https://london.hee.nhs.uk/medicines-management-legal-aspects-prescription-writing
[43] Health and Social Care Act 2012. Available at: https://www.legislation.gov.uk/ukpga/2012/7/contents/enacted

instrumental in developing guidelines and standards for pharmacy practitioners, including directives on electronic prescriptions. Supervising this digital shift is NHS Digital, the body responsible for implementing and managing the Electronic Prescription Service (EPS), a system that enables the electronic transmission of prescriptions within the NHS infrastructure. To ensure the confidentiality and security of patient data during this digital transition, the Data Protection Act 2018 and the General Data Protection Regulation (GDPR) stand as the custodians of data management, fostering a secure environment for the electronic prescription system. As the UK continues advancing in this sector, it becomes imperative to meticulously examine these legal texts and guidelines, identifying specific provisions relating to electronic prescriptions, while remaining vigilant to new legislative initiatives and adjustments in the sector.

61. The National Health Service has significantly migrated towards electronic prescriptions, which has become the norm for prescribing medicines and essential supplies, thus limiting the use of paper prescriptions to special cases. This shift offers two options for patients: one, designating a preferred pharmacy or dispenser to handle all their prescriptions electronically, saving time and reducing unnecessary visits to the GP; or two, opting for a paper copy of the prescription each time, which features a unique barcode that can be scanned to retrieve the electronic prescription from the NHS database.[44]

62. Moreover, the system allows for easy alterations or cancellations of chosen dispensers, which can be facilitated through a discussion with the GP or pharmacist before the next prescription is ordered. This flexibility ensures that patients are not tied down to a single pharmacy or dispenser and can make changes as per their convenience.[45]

63. Furthermore, in case of dissatisfaction with the electronic prescription process, patients have the right to raise complaints with the respective dispenser, their GP practice, or the local integrated care board. The process emphasises obtaining consent from the patient before recording their choice of dispensers, thereby ensuring transparency and adherence to patient preferences.[46]

[44] NHS, Electronic Prescriptions (2023). Available at: https://www.nhs.uk/nhs-services/prescriptions-and-pharmacies/electronic-prescriptions/
[45] *Ibid*
[46] *Ibid*

FRANCE

64. Doctors illegible handwriting is a situation where not only patients but even pharmacists and fellow doctors struggle to decode the prescriptions, sometimes resorting to guesswork based on the patient's known conditions. In an article which appeared in "Le Figaro" in 2022 titled "*Pourquoi les médecins écrivent-ils aussi mal?*" (Why doctors write so badly?), the author highlights that this issue is not just a matter of inconvenience, it has serious implications for patient safety. The text underscores that according to article 34 of the medical deontology code, a prescription must be written legibly to prevent any misunderstandings regarding the medication's name, dosage, administration method, and treatment duration. The ill-legibility can sometimes lead to fatal errors, especially with medications having similar names. While the transition to digital prescriptions is gradually mitigating this problem, it is contingent upon the healthcare professionals being well equipped with the necessary technological resources.[47]

65. Medical prescriptions in France are regulated by a combination of legislation, professional guidelines, and digital infrastructure to ensure the safe and efficient distribution of medications to patients. Here, we will explore the foundational legal and regulatory frameworks governing medical prescriptions in France, focusing on the characteristics of prescriptions, the transition to electronic prescriptions, and the specific entities overseeing this sector.

66. In France, the Public Health Code (*Code de la santé publique*) serves as the foundational legal document governing the medical and pharmaceutical sector, including the rules regarding medical prescriptions. This code stipulates the requirements for prescribing medications, which includes ensuring that prescriptions are clear and legible to prevent errors in medication dispensation. Moreover, it defines the roles and responsibilities of healthcare professionals in the prescription and dispensation of medications.

[47] Aliénor Vinçotte, '' Pourquoi les médecins écrivent-ils aussi mal ?'' (Le Figaro, 2023), available at: https://www.lefigaro.fr/langue-francaise/actu-des-mots/pourquoi-les-medecins-ecrivent-ils-aussi-mal-20220422#:~:text=Pourtant%2C%20l'article%2034%20du,%2C%20la%20dur%C3%A9e%20du%20traitement%C2%BB.

67. In the framework governing medical prescriptions in France, a meticulous process is outlined to ensure the transparency and accuracy of prescriptions intended for human medicine. A prescription should be drafted clearly post the patient's evaluation and should encompass detailed information about the prescriber. Additionally, the date when the prescription was issued needs to be clearly mentioned. If the prescription is initiated in a hospital, it is necessary to mention the name of the respective institution or health service.[48]

68. The prescription should also contain a comprehensive detailing of the prescribed medication or product. This includes its name or the active ingredient as recognised by its common denomination, alongside the stipulated dosage and usage instructions. If the prescription pertains to a preparation, a detailed formula should be presented. Furthermore, the prescription should specify the duration of the treatment or, as per specific regulations, the amount of packaging units and any necessary renewals. For drugs that fall under the initial hospital prescription category, a record of the date for a new diagnosis, as necessitated by the market authorisation or temporary usage authorisation, should be documented.[49]

69. Additionally, prescriptions must hold vital information regarding the patient including their full name, gender, date of birth, and when required, measurements of height and weight. If necessary, the prescription should adhere to the requirements dictated by the social security code and corresponding articles, encapsulating all necessary elements and mentions to ensure a transparent and secure prescription process.[50]

70. According to article R.4127-34 of the Public Health Code, a physician is mandated to articulate their prescriptions with the necessary clarity, ensure understanding by the patient and their family, and strive to secure proper adherence. This necessitates the use of prescriptions, which are usually completed at the end of a consultation.[51]

71. Recognising the potential of technology to enhance the safety and efficiency of the healthcare system, France has been progressively adopting electronic prescriptions. The "*Ma Santé 2022*" strategy, launched by the French government, aims to accelerate the digital

[48] Article R5132-3 du Code de la santé publique. Available at: https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000041579588#:~:text=La%20prescription%20de%20m%C3%A9dicaments%20ou,d%C3%A9finie%20%C3%A0%20l'article%20R.
[49] *Ibid*
[50] *Ibid*
[51] Article R4127-34 du Code de la santé publique.
Available at: https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000006912896

transformation of healthcare services, including the widespread implementation of electronic prescriptions by 2022. This strategy is supported by a legal framework that enables the use of digital tools in healthcare, including the "Digital Health" law of 2019 which sets the foundation for the development and deployment of telemedicine and e-health services, including electronic prescriptions.[52]

72. The process of e-prescription in France is a systematic and secure procedure that greatly facilitates the prescribing and dispensing of medications. Utilising a Prescription Assistance Software (*Logiciel d'Aide à la Prescription* or LAP), the procedure relies on a secure database hosted by the Health Insurance organisation, with access strictly limited to health professionals, including doctors and pharmacists, authenticated through their professional cards.[53]

73. Initially, a doctor formulates the prescription using the *Logiciel d'Aide à la Prescription*, which then generates a unique number. With the patient's consent, this prescription is stored in their personal health space. Subsequently, the doctor prints the prescription, which now contains a QR code encapsulating vital details such as the unique number generated by the *Logiciel d'Aide à la Prescription*, the identities of the prescriber and the patient, and the prescription details. This step marks the patient's cue to visit the pharmacy with their paper prescription. At the pharmacy, the pharmacist scans the QR code to extract the encapsulated data, dispenses the medication accordingly, notes any potential alterations, and forwards this information to the Health Insurance database. If the patient agrees, the doctor is notified of the successful dispensation of the prescribed medications, thus closing the loop of this secure and efficient system.[54]

74. To ensure the safe and effective implementation of electronic prescriptions, various professional bodies and regulatory agencies oversee the sector. The National Agency for the Safety of Medicines and Health Products (ANSM) is responsible for overseeing the safety of medicines, including monitoring the prescribing practices of healthcare professionals. Moreover, professional organisations such as the National Order of Pharmacists (*Ordre*

[52] Ministère de la Santé et de la Prévention, Ma santé 2022 : un engagement collectif, available at: https://sante.gouv.fr/systeme-de-sante/masante2022/; and
Locharchives, Ma Santé 2022 & Hop'En: le virage numérique du système de santé français. Available at: https://locarchives.fr/actualites/ma-sante-2022-hopen-le-virage-numerique-du-systeme-de-sante-francais/
[53] Paymed, "Qu'est-ce que l'e-prescription et comment fonctionne-t-elle ?" (2022), available at: https://www.paymed.pro/eprescription/
[54] *Ibid*

national des pharmaciens) and the National Council of the Order of Doctors (*Conseil national de l'Ordre des médecins*) issue guidelines and recommendations to practitioners on good prescribing practices, including guidance on the use of electronic prescriptions.

75. To facilitate the transition to electronic prescriptions, the French government has invested in developing secure digital infrastructure. My health space (*Mon espace santé*) is a trustworthy digital service that allows everyone to maintain control over their health data, securely storing and sharing all the documents and information necessary for their medical monitoring with their healthcare professionals. Beyond the medical record, this service provides access to secure messaging, as well as a catalogue of health services and applications referenced by public services, and eventually, to a medical calendar. Everything one needs to facilitate their daily medical follow-up.[55]

NEW ZEALAND

76. In New Zealand, the process of medical prescription is a highly regulated and streamlined process to ensure the safety and health of the public. The primary legislative frameworks governing the prescription of medicines are the Medicines Act of 1981 and the Medicines Regulations of 1984. These are supplemented by the Misuse of Drugs Act 1975, which governs the prescription of controlled drugs. These acts and regulations lay out the specific guidelines and standards for prescribing, dispensing, and managing medicines in the country. Recently, updates to the Misuse of Drugs Regulations 1977 have enabled the facilitation of signature-exempt prescriptions for controlled drug medicines through the New Zealand Electronic Prescription Service (NZePS), significantly reducing administrative burdens.[56]

77. According to the Medicines Regulations 1984, particularly Regulation 22, a legal prescription must contain detailed information about the prescriber, including their name, address, and registration number. Additionally, it must feature detailed patient information,

[55] Mon espace santé, un carnet santé numérique et sécurisé. Available at: https://www.ameli.fr/assure/sante/mon-espace-sante/mon-espace-sante-carnet-sante-numerique

[56] Medicines Act 1981, available at: https://www.legislation.govt.nz/act/public/1981/0118/latest/DLM53790.html and the Medicines Regulations of 1984.
Available at: https://www.legislation.govt.nz/regulation/public/1984/0143/latest/DLM95668.html; and
Ministry of Health, NZ, "Expansion of New Zealand ePrescription Service to include controlled drug medicines" (2022). Available at: https://www.health.govt.nz/news-media/news-items/expansion-new-zealand-eprescription-service-include-controlled-drug-medicines

including their name and address, along with specific details about the prescribed medicine, such as the name, strength, form, dose, and quantity of the medicine. This regulation ensures that prescriptions are issued with utmost clarity, reducing the chance of errors and misuse. The New Zealand Electronic Prescription Service further enhances this clarity by allowing prescribers to note the reason for prescribing at the time of issuing, which is then transmitted electronically to pharmacies.[57]

78. The Misuse of Drugs Act 1975 puts forth stringent regulations concerning the prescription of controlled drugs. According to Section 24 of the Act, prescriptions for controlled drugs must be issued with special attention to detail, including precise quantities and strengths, and must be signed by the prescriber in their own handwriting to prevent fraudulent activities. This section also delineates the roles and responsibilities of pharmacists and prescribers in the management of controlled drugs, ensuring the safe and legal distribution of these substances. Recent amendments to the regulations have expanded the scope of prescriptions for Class B controlled drugs, potentially extending the coverage period to up to three months when facilitated through the New Zealand Electronic Prescription Service.[58]

79. In recent years, New Zealand has embarked on a significant digital transformation with the introduction of the New Zealand Electronic Prescription Service, aligning with the provisions of Regulation 44 of the Medicines Regulations 1984. This service facilitates the electronic transmission of prescriptions from the prescriber to the pharmacist, thereby enhancing the efficiency and accuracy of the prescribing process. This shift to a digital platform ensures a smoother, faster, and safer process for the issuance and fulfilment of prescriptions, with features like electronic signature verification adding an extra layer of security.[59]

80. To support virtual care, especially in the wake of the COVID-19 pandemic, temporary rules were introduced to facilitate the provision of electronic prescriptions, even in systems that

[57] the Medicines Regulations of 1984.
Available at: https://www.legislation.govt.nz/regulation/public/1984/0143/latest/DLM95668.html
[58] Pharmac, "Proposal to amend Pharmaceutical Schedule Rules on prescribing and dispensing of Class B controlled drugs" (2022).
Available at: https://pharmac.govt.nz/news-and-resources/consultations-and-decisions/2022-11-28-proposal-to-amend-pharmaceutical-schedule-rules-on-prescribing-and-dispensing-of-class-b-controlled-drugs/
[59] The Royal New Zealand College of General Practitioners, "E Prescriptions in general practice: better medicines management".
Available at: https://www.rnzcgp.org.nz/gpdocs/New-website/Advocacy/PB8-2016-August-ePrescriptions.pdf

are yet to be fully integrated with the New Zealand Electronic Prescription Service. These rules are set to expire on 31 October 2024, offering a transitional period for systems and settings to complete their integration with the New Zealand Electronic Prescription Service. This transition period is vital in preventing disruptions and ensuring a smooth shift to the electronic system across all healthcare settings. After the expiration date, all prescriptions will be required to adhere to the standards set by the fully integrated New Zealand Electronic Prescription Service, fostering a more streamlined and secure prescription process nationwide.[60]

81. Pharmacists play a critical role in the prescription process in New Zealand. According to the Medicines Act 1981 and the relevant regulations, pharmacists are responsible for verifying the legitimacy of prescriptions, ensuring the accuracy of the prescribed medicines, and advising patients on the correct use of their medications. Regulation 57 of the Medicines Regulations 1984 outlines the duties and responsibilities of pharmacists when dispensing medicines, emphasising their role in preventing errors and ensuring patient safety. Moreover, the NZePS enables pharmacists to send dispensing comments back to the prescriber, enhancing the loop of communication and collaboration.[61]

82. The prescription process in New Zealand is governed by a series of comprehensive legislations and regulations that work hand in hand to ensure the safety and well-being of the public. From prescribing to dispensing, every step is regulated to prevent errors, misuse, and fraudulent activities. The recent advancements in electronic prescription services further underscore New Zealand's commitment to leveraging technology to enhance the safety and efficiency of the healthcare system, promoting better communication between the prescriber and pharmacist, and potentially improving patient adherence to medication regimes.

[60] Te Whatu Ora, Ministry of Health, NZ: "Signature Exempt Prescriptions and remote prescribing".
Available at: https://www.tewhatuora.govt.nz/our-health-system/digital-health/emedicines-and-the-new-zealand-e-prescription-service/eprescriptions/signature-exempt-prescriptions-and-remote-prescribing/
[61] Medicines Act 1981, available at: https://www.legislation.govt.nz/act/public/1981/0118/latest/DLM53790.html and the Medicines Regulations of 1984.
Available at: https://www.legislation.govt.nz/regulation/public/1984/0143/latest/DLM95668.html

SEYCHELLES

83. In Seychelles, the dispensation of medicines and the practice of pharmacy are governed by stringent regulations to safeguard public health. As described in the Seychelles Pharmacy Act 1899, specifically in section 9, pharmacists are mandated to adhere strictly to written prescriptions signed by duly qualified medical practitioners when preparing or dispensing any medicinal preparations. These prescriptions should strictly align with the guidelines and directives of the British Pharmacopoeia or any other codex or formulary recognised legally in foreign nations. Moreover, it is imperative for pharmacists to register all prescriptions comprehensively in a designated book, thus maintaining a detailed record of the medicinal dispensations.[62]

84. Furthermore, the Act imposes stringent prohibitions on pharmacists, barring them from engaging in the practice of medicine or surgery in any form, as stated in section 11. The Act also forbids the sale, distribution, or possession of secret remedies, except under specified conditions outlined in section 10. Additionally, it stipulates penalties for the contravention of these provisions, including fines not exceeding five hundred rupees or imprisonment not exceeding six months in certain cases. In line with upholding the integrity of the profession, section 16 of the act accentuates the necessity of confidentiality, penalising the disclosure of information about the remedies dispensed as per a doctor's prescription. This underscores the commitment to safeguarding patient privacy and ensuring the ethical practice of pharmacy in Seychelles.[63]

85. The regulatory framework for medical prescriptions would typically fall under the jurisdiction of the Ministry of Health. The Ministry is responsible for setting the guidelines and regulations governing the practice of medicine in the country, including the issuance of medical prescriptions.

86. In a significant move towards modernisation, Seychelles is making steadfast progress in digitising its public health system, a project that has now advanced to its second phase, according to a senior health official. The initiative, which originally centred on establishing a health information system, has expanded to encompass a more comprehensive health

[62] Section 9 of the Pharmacy Act 1899 (Seychelles)
[63] Part II of the Pharmacy Act 1899 (Seychelles)

management information system. This broader scope is aimed at fostering a more integrated and efficient health sector in the nation.[64]

87. The transformation of Seychelles' public health infrastructure is gearing up to revolutionise not only data management but also the prescription protocols in the healthcare system. As part of the upgraded health management information system, the process of prescribing medications is set to become more transparent and traceable. According to the CEO of the Health Care Agency, the novel system will maintain records of patients' prescription histories, thereby enhancing the quality of care and minimising potential risks of over prescription or misuse. This digital upgrade, thus, promises to usher in a new era of transparency and efficiency, fostering a safer and more accountable healthcare environment in Seychelles.[65]

[64] All Africa: "Seychelles: Digitisation of Seychelles' Public Health System Nearly Complete", available at: https://allafrica.com/stories/202306200445.html
[65] *Ibid*

E. ANALYSIS AND RECOMMENDATIONS

88. In the modern era, the healthcare sector globally is witnessing a transformative shift from traditional paper-based systems to digital platforms. This transition, primarily marked by the adoption of electronic prescriptions (e-prescriptions), addresses the longstanding issue of illegible handwriting in medical prescriptions.

89. Norway stands out in the domain of e-prescriptions, having successfully implemented a comprehensive digital system that allows seamless communication between healthcare providers and pharmacies. This approach not only nullifies the risk of errors stemming from illegible handwriting but also promotes efficient data management, thereby fostering improved patient care and streamlined healthcare processes. The Norwegian model serves as an exemplary blueprint, demonstrating the immense potential of a well-orchestrated transition to digital healthcare platforms.

90. Following in the footsteps of Norway, New Zealand has been assertive in its pursuit of digital transformation in the healthcare sector. The introduction of the New Zealand Electronic Prescription Service (NZePS) signifies a noteworthy move towards mitigating issues associated with illegible handwriting, thereby enhancing the accuracy and safety of medical prescriptions. Furthermore, the integration of electronic signatures and the feature that allows prescribers to receive notifications regarding the dispensation status of medications augment the effectiveness of the healthcare delivery system.

91. France is on a progressive trajectory towards adopting e-prescriptions. The French healthcare system is gradually embracing digital technologies, which not only promise to curb errors due to illegible handwriting but also enhance the efficiency and reliability of healthcare services by facilitating better communication and coordination between healthcare providers and pharmacists.

92. In the UK, the transition towards e-prescriptions has been marked by the implementation of the NHS Electronic Prescription Service (EPS). This service has been pivotal in addressing the issues associated with illegible handwriting, ensuring a more accurate and efficient prescription process. Additionally, the Electronic Prescription Service facilitates better

communication between healthcare providers and pharmacists, promoting a coordinated approach to healthcare delivery and enhancing patient safety.

93. In Seychelles, the healthcare system is gearing up to embrace digitalisation, with concerted efforts to overhaul traditional practices and pave the way for a modernised healthcare infrastructure. This initiative is anticipated to eliminate the problems associated with illegible handwriting, promoting a more streamlined and error-free approach to medical prescriptions. Additionally, the digitisation process promises to foster enhanced coordination and communication within the healthcare sector, catalysing a shift towards more proficient and reliable healthcare services.

94. It has to be noted that Mauritius has in place a significant transformation in its healthcare sector. Spearheaded by the Ministry of Health and Wellness and supported by the United Nations Development Programme (UNDP), Mauritius is working towards replacing the existing paper-based system with an integrated e-Health system across all public regional and healthcare centres. This initiative not only targets the eradication of illegible handwriting issues but also aims at fostering an inclusive health sector through structural transformation. The project, backed by substantial investment, sets the stage for an enriched healthcare landscape, promising improved quality of services and fostering skill development and knowledge transfer within the sector.[66]

95. However, when transitioning to electronic prescriptions, one should be mindful of the protection of the patient's data which is inserted. In this regard, Section 14 of the Data Protection Act provides that no person shall act as controller or processor of data unless he or it is registered with the Data Protection Commissioner. Moreover, Section 27(1)(a) of the same Act posits that where the purpose for keeping personal data has lapsed, every controller shall destroy the data as soon as is reasonably practicable

96. From the analysis, it is evident that the transition towards e-prescriptions serves as a potent solution to the pervasive issue of illegible handwriting in medical prescriptions. As Mauritius is already on a path towards digitalising its healthcare system as aforementioned, updating the existing laws to facilitate the issuance of printed medical prescriptions would be a logical

[66] United Nations Development Programme "Signature of Portfolio Documents on E-Health Initiatives by UNDP Mauritius and the Ministry of Health and Wellness" (2022), available at: https://www.undp.org/mauritius-seychelles/news/signature-portfolio-documents-e-health-initiatives-undp-mauritius-and-ministry-health-and-wellness

and significant step forward. Consequently, it is recommended that section 21(3)(a) of the Pharmacy Act 1983 be amended, where the term 'handwritten' should be removed and replaced by the words "in printed form". This amendment would not only significantly curb the challenges posed by illegible handwriting and potential forgery but also align with the ongoing efforts to modernise the healthcare environment in Mauritius, fostering a safer and more efficient healthcare system.

97. Indeed, one of the principal concerns about handwritten prescriptions is the issue of illegibility,[67] a problem deeply rooted in the practice. In a study published in the Journal of the American Medical Informatics Association, researchers found that handwritten prescriptions often contribute to medication errors due to the difficulty in deciphering handwriting, the use of abbreviations, and human factors such as haste or distraction.[68]

98. The proposed amendment to Section 21(3)(a) of the Pharmacy Act 1983, which calls for replacing the term "handwritten" with "in printed form", is redolent of a transformative approach in an era that relentlessly seeks both accuracy and efficiency. This modification aims to ameliorate the quality and safety of healthcare delivery by addressing several critical issues such as illegibility, forgery, and the general modernisation of healthcare systems. In this context, the Commission has prepared a draft amendment bill to the Pharmacy Act 1983 which is attached in this Issue Paper as "Annexe".

[67] As D.W. Bates et al. articulate in their 1995 study published in the Journal of the American Medical Association, medication errors due to poor legibility could have dire consequences ranging from delayed treatment to fatal outcomes ("Incidence of adverse drug events and potential adverse drug events: Implications for prevention"). Legally, illegible prescriptions can cause inadvertent harm to the patient, thereby placing healthcare providers in a precarious position vis-à-vis malpractice claims. Therefore, the transition to printed prescriptions serves as a risk mitigation strategy, preserving the integrity of the healthcare delivery system and shielding professionals from potential legal repercussions.

[68] "Errors associated with outpatient computerized prescribing systems", J Am Med Inform Assoc., 2005

CONCLUSION

99. As we navigate through the 21st century, the global healthcare sector stands at a pivotal juncture where the transition from paper-based systems to digital platforms is not only imminent but essential. This transition, supported by the adoption of e-prescriptions, has emerged as a way to address the age-old issue of illegible handwriting in medical prescriptions, which has been a significant contributor to medical errors and inefficiencies. This shift is not just about clear handwriting; it opens the doors to a myriad of benefits that promise to overhaul the healthcare sector fundamentally.

100. The introduction of e-prescriptions marks a revolutionary step towards enhancing the accuracy and efficiency of healthcare delivery systems. By negating the risks associated with illegible handwriting, e-prescriptions foster a safer environment for patients, wherein the chances of errors due to misinterpretation of handwriting are virtually eliminated. Moreover, this digital transformation facilitates seamless communication and coordination between various stakeholders in the healthcare sector, including doctors, pharmacists, and patients, thus promising a more streamlined and cohesive approach to healthcare delivery.

101. Furthermore, the adoption of digital platforms in healthcare is not confined to the benefits of legible prescriptions. It brings to the fore a plethora of advantages such as efficient data management, real-time tracking of prescription status, and the ability to integrate various healthcare services under a unified system. This integration ensures a holistic approach to healthcare, where every facet of a patient's medical history is readily available, facilitating informed decision-making and personalised healthcare solutions.

102. In conclusion, as nations stand on the cusp of a healthcare revolution,[69] the adoption of e-prescriptions emerges as a vital step towards fostering a safer and more efficient healthcare environment. This transition, characterised by enhanced legibility, streamlined processes, and cohesive coordination, promises to redefine the contours of healthcare delivery,

[69] As Herbert A. Simon, the esteemed social scientist and Nobel Laureate, aptly observed, "Improving the effectiveness of problem-solving today depends on our ability to improve the interfaces among component systems" ("The Sciences of the Artificial", MIT Press, 1969). The healthcare sector is no exception. Modern systems integrate elements of information technology to streamline operations and enhance service delivery. Countries such as the United States and the United Kingdom have incorporated electronic prescriptions in their healthcare reforms to align with modernization efforts. By modernizing its legislation, Mauritius would not only harmonize its laws with international best practices but also position itself at the vanguard of healthcare innovation within the region.

heralding an era where patient safety and well-being are at the forefront. Given the empirical evidence and jurisprudential rationale, it is prudent to affirm that the amendment of Section 21(3)(a) of the Pharmacy Act 1983 to replace "handwritten" with "in printed form" would constitute a salient legal reform. This change would improve the safety and efficiency of the healthcare system in Mauritius by mitigating the risks associated with illegible handwriting, preventing forgery, and advancing the broader objectives of healthcare modernisation. Thus, the proposed amendment should be viewed as an essential legal intervention, harmonising legislation with technological advancement and serving the higher ideals of public health and safety. It is a journey towards a future where the healthcare sector is marked by innovation, inclusivity, and excellence, promising a healthier and brighter tomorrow for all.

ANNEXE

THE PHARMACY (AMENDMENT) BILL 1983

(No. ... of 2023)

Explanatory Memorandum

The primary objective of the proposed amendment is to transition from handwritten prescriptions to printed prescriptions. This shift not only aims to mitigate the risks associated with illegible handwriting but also seeks to streamline the prescription process, making it more aligned with the digital advancements in the healthcare sector.

.....

Minister of .....

..... 2023

THE PHARMACY (AMENDMENT) BILL 1983

(No. ..... of 2023)

ARRANGEMENTS OF SECTIONS

Section

A BILL

To amend the Pharmacy Act 1983

ENACTED by the Parliament of Mauritius, as follows –

1. Short title

This Act may be cited as the Pharmacy (Amendment) Act 2023.

2. Interpretation

In this Act –

"principal Act" means the Pharmacy Act;

3. Section 21(3)(a) amended in the Principal Act

Section 21(3)(a) of the principal Act is amended by deleting the word "handwritten" and replacing it by the words "in printed form".