Opioids are potent painkilling drugs used clinically to treat severe pain, but their addictiveness can cause dependence and a high potential for abuse. Opioids are misused throughout the world, and the opioid epidemic centred in the US leads to more than 100 deaths every day. Professor Mark Strand and his team at North Dakota State University have developed the ONE Program, which provides pharmacists with the knowledge and tools to carry out opioid risk-screening on patients, enabling them to give targeted support to patients at risk of abuse or overdose.

Opioids, originally derived from the opium poppy, include the compounds morphine, codeine and papaverine, all of which can be extracted directly from the poppy’s seed pods. These compounds have been used by humans for thousands of years for their painkilling and euphoric effects.

The powerful pain relief delivered by opioids has prompted widespread pharmaceutical effort to synthesise more potent versions with fewer side effects. These man-made opioids are either semi-synthetic – derived from existing opioid compounds by chemical synthesis – or synthetic, built entirely from simple chemical starting materials. Semi-synthetic opioids include heroin, oxycodone and buprenorphine, while the 100+ synthetic opioids include fentanyl, oxycodone and tramadol.

**OPIOID USE DISORDER AND ACCIDENTAL OPIOID OVERDOSE**

Opioid misuse and addiction are known worldwide. However, as much as 80% of the global opioid supply is consumed in the US. It is estimated that more than 450,000 people in the US have died due to opioid overdose since 1999, with an estimated 128 deaths every day. The mechanism by which opioids cause fatality is through respiratory depression, where the rate of breathing is hindered to the point where oxygen cannot be sufficiently absorbed by the body. This risk is particularly high in the case of some synthetic opioids whose lethal dose can be far lower than morphine due to their greater potency. In addition, the misuse of and addiction to opioids is a serious national crisis that affects the social and economic welfare of society.

An estimated one out of every four individuals receiving long-term opioid therapy struggles with addiction, which in turn causes an economic burden to the US of over $78 billion each year.

**THE ROLE OF PHARMACISTS**

Pharmacists are a vital player in the effort to reduce opioid abuse. Their responsibilities and opportunities for patient contact make them effective ‘gatekeepers’, able to minimise the abuse potential of prescribed opioids through patient-centred care. Yet pharmacists' potential to reduce the harm caused by opioid misuse is not being fully realised.

To address this, Professor Mark Strand and his colleagues at North Dakota State University, USA, developed the ONE (Opioid Nonmedical Education) Program, an educational initiative aimed at screening and educating patients receiving prescription opioids in community pharmacies across North Dakota. By proactively educating pharmacists, patients, and communities about opioid misuse and accidental overdose, and introducing opioid risk-screening to patients, they want to bring the prevention of opioid misuse upstream to the medication-dispensing process at the pharmacy. Community pharmacies throughout the state of North Dakota were invited to participate.

**NALOXONE AND PHARMACY PRACTICE**

Naloxone provides a good example of why the ONE Program is particularly timely. Naloxone is an opioid antagonist that binds to specific receptors in the body to block the effects of opioid drugs. By prescribing and dispensing naloxone to patients suspected to be at greater risk of overdose, pharmacists can have a huge impact on providing education and resources to patients to prevent overdose deaths and improve the wellbeing of their communities.

Pharmacists in the US have been slow to use naloxone, however, with a large degree of variability across the country. It was found that more than half the community pharmacists in Minnesota had not dispensed any naloxone in the preceding month, while in California, fewer than a quarter of community pharmacies surveyed had naloxone available for purchase. The research showed that more resources, investment, and organisational support were needed to enable pharmacists to have a greater impact on the opioid crisis, improved training on the use of naloxone being one example.

**PATIENT SCREENING**

Following a successful pilot program, Professor Strand’s team implemented training and tools for pharmacists in North Dakota to increase preparedness for identifying and tackling patients most at risk of opioid misuse or accidental overdose. During the ONE Program process, all patients receiving prescription opioids are screened for their risk of opioid misuse before receiving their medication, and for their risk of accidental overdose, which is based on factors including the patient’s age, concurrent medications, and pre-existing diseases. For example, the use of benzodiazepine drugs, high alcohol intake, existing opioid use and co-morbidities such as liver disease and sleep apnea were all criteria which may increase the risk of accidental overdose. The risk-screening tool has enabled pharmacists to take a patient-specific approach to opioid misuse and overdose prevention, helping them to intervene in a more appropriate, targeted manner using the evidence-based process provided by the ONE Program.

**ONE PROGRAM OUTCOMES**

The methods of opioid-focused pharmacy intervention varied depending on the patient’s prior life experience and assessed risk for misuse and overdose. In all cases, regardless of individual patient risk, methods to reduce abuse potential were introduced including medication take-back (through which unused drugs could be disposed of) and partial filling of prescriptions, where a reduced number of doses is dispensed to the patient at any one time. For individuals determined to be at increased risk, pharmacists were encouraged to discuss community support services available to the patient, including how and when to seek them if required.

Pharmacists were also urged to discuss the risks of accidental overdose when this was deemed appropriate for the patient’s circumstances. The benefits and availability of naloxone were explained to patients identified as at risk for overdose, and the pharmacist facilitates the dispensing of naloxone when necessary. Pharmacists were also urged to discuss the risks of accidental overdose when this was deemed appropriate for the patient’s circumstances.

The vast majority (97.1%) of patients at risk of misuse and/or overdose were given one or more of the critical pharmacists-led interventions to promote opioid harm reduction. This represents a huge success in terms of educating pharmacists to deliver the vital support and information to the patients who need it most.

**STIGMATISATION OF OPIOID MISUSERS**

Another area of impact for the program was in understanding and mitigating stigmatisation of opioid abusers. Previous studies have shown a tendency among healthcare professionals to stigmatise certain patients particularly in cases of behavioural health. These negative attitudes include...
The opioid risk-screening approach allowed pharmacists to take a patient-specific approach to opioid misuse and overdose prevention.

**LOOKING TO THE FUTURE**

A shortcoming of the program identified by the researchers was the number of patients receiving opioid prescriptions who completed the screening: at 16.9% this fell far short of the programme’s target of 90%, highlighting the difficulty of introducing a new service across a large number of pharmacies simultaneously. Of the 149 registered pharmacies in the state, 63 of these enrolled to participate in the ONE Program – far exceeding the researchers’ target of enrolling 25% of the state’s pharmacies. The ONE Program has been seen as a breakthrough in the way pharmacists can tackle the opioid epidemic, and the team can now modify the programme to optimise its positive impacts.

Looking forward, Professor Strand’s team is interested in sharing the techniques and results of the ONE Program across other states in the US, to help pharmacists have the greatest influence against the opioid epidemic. The systematic nature of the programme, as well as the urgent importance of the opioid crisis, give the team confidence that its methods can be implemented effectively into pharmacy practice elsewhere.

### References


