Injection use in a village in North India

UNDERGRADUATE STUDY TEAM, K. ANAND, C. S. PANDAV, S. K. KAPOOR

ABSTRACT

**Background.** Injections can transmit infections such as human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV), and precipitate poliomyelitis. Complications such as injection abscesses and nerve damage may also occur. It is estimated that 50% of the injections given in developing countries are unsafe. However, limited information is available from India. We planned a pilot study to assess the prevalence of injection use and the knowledge of the community and private medical practitioners (PMPs) about Injection use.

**Methods.** One in every four houses in the village under study was selected by systematic random sampling. One adult (> 18 years) respondent in the family was asked questions about family members receiving injections in the past 6 months. Nine PMPs were interviewed about their knowledge and practices regarding injection use.

**Results.** In the past six months, 1280 family members in 285 houses received 1575 injections (2.46 injections per person per year). About 35% had received at least one injection in the past 6 months. Children below 5 years received 3.1 injections/child/year of which about 60% were preventive. On their last visit to a health facility, 55% of the subjects were given injections using disposable syringes. About 45% of the 285 respondents knew that diseases could be spread by improper use of injections. While 18% of the respondents said they would prefer injections, 54% preferred oral medications if both were equally effective. After being told the average cost of disposable needles and syringes, 92% of the respondents were willing to buy them.

None of the 9 PMPs practising in the village were formally trained in modern medicine. On the day of observation, 18 of 58 patients (30%) seen by PMPs were given injections. Three injections were observed and though they were all given with disposable syringes, the technique of administration did not follow standard guidelines in any. Two PMPs did not know of any disease transmitted by injections. The syringes were usually thrown in a nearby drain or outside the village. Four PMPs said that patients themselves did not ask for injections.

**Conclusion.** The use of injections in the study area was high. The PMPs were not only giving a high number of injections but the technique of administration was also wrong. The community was less likely to ask for injections on their own but was willing to buy disposable syringes and needles. The awareness about the risk of injections was low.

Natl Med J India 2001; 14:143–4

INTRODUCTION

Injections are one of the means used to deliver therapeutic agents. However, in addition to the pain caused, they can lead to other undesirable effects. These include transmission of infections such as the human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). Injections may precipitate poliomyelitis, and are also associated with complications such as injection abscesses and nerve damage. The World Health Organization (WHO) estimates that at least 12 billion syringes are sold for injection and 1 billion injections are given yearly as a part of the childhood immunization programmes. Based on a model, it was estimated by Kane et al. that 8–16 million HBV, 2.3–4.7 million HCV and 80 000–160 000 HIV infections may result every year from unsafe injections.

Simonsen et al. estimated from a review of studies from developing countries that, on an average, each person received 2 injections per year and 50% of these injections were unsafe. To reduce the complications due to unsafe injections, fewer injections should be administered and the technique of administration should be improved.

However, little is known of the problem in India. This pilot study assessed the prevalence of injection use in a community, as well as the knowledge about injection use in the community and of private medical practitioners (PMPs) practising in the area.

METHODS

The study was done in village Fatehpur Billoch of Haryana, a state in northern India. This village is among the 28 villages covered by the All India Institute of Medical Sciences (AIIMS), New Delhi under its Comprehensive Rural Health Services Project (CRHSP). The population of these villages is provided health services by AIIMS in keeping with national guidelines. The CRHSP is also used for undergraduate medical teaching (seventh semester) to sensitize students to rural health problems. One of the methods of learning is a field epidemiological exercise on a health problem. Injection use was studied by a batch of 12 medical students in November–December 1999.

An interview schedule was designed in a workshop. To reduce inter-observer variation, the enquiry and its response were standardized. The interview, which took about 10 minutes per respondent, was pre-tested in a nearby village. One adult (aged 18 years or above) in the family was questioned. The questions included whether any family member had received injections in the last six months and the indication thereof. The respondents were also asked about their last personal contact with a medical practitioner, and whether during this contact they had actually observed any family member receiving an injection. Questions were asked to assess the safety of the injection. The knowledge of the respondents regarding related issues was also assessed. The PMPs were
interviewed regarding their knowledge and practices. A checklist was prepared for an observational study among the PMPs on patients visiting them during the visit of the students.

This village was selected as it has the largest population in the region and, more importantly, many medical practitioners. Based on a preliminary survey and available records, it was estimated that the village had 1300 houses with a population of 9000 and 20 PMPs. The students made about 15 visits each and took about 75 minutes for data collection. The students were divided into 5 teams (the sixth team provided treatment for minor ailments). It was estimated that roughly 325 houses could be interviewed in the time available. Therefore, one in every fourth house was selected by systematic random sampling. The data were entered in Foxbase and analysed using the programme EPIINFO.

RESULTS
One adult respondent was available in 285 houses. Forty-one per cent were 18–30 years old and 39% were 31–45 years old, 49% were men and 51% women. Information was available for 1280 family members.

A total of 1575 injections were received by this population in the past 6 months (2.46 injections per person per year) of whom about 35% had received at least 1 injection. In children below 5 years, the incidence was 3.1 injections/child/year. About 60% of injections given to children were preventive (immunization). Thus, children were estimated to receive 1.3 therapeutic injections per year.

Based on the information provided by the respondents about their last visit to a health facility, 55% of the visits resulted in an injection being given. The commonest illness for which it was given was fever. About 86% of the injections were given on the doctor’s advice without the patient specifically asking for it. Disposable syringes were used for 43% of the injections. Complications such as fever, local redness, etc. occurred following 12% of the injections (including immunizations).

About 45% of the 285 respondents knew that diseases could be spread by the improper use of injections. Among those who knew (n=128), AIDS was identified by 43%, jaundice by 10.5% and 18% did not know about the diseases. When asked which method they would prefer, oral or injections, if both were equally effective, 18% said they would prefer injections, 54% preferred oral medication and the rest said they would follow the doctor’s advice. Seventy-one per cent of the respondents had heard about disposable needles and syringes and 92% of the respondents were willing to buy these after they were informed of the cost.

Only 9 PMPs were found to be practising in the area. None was formally trained in any system of medicine. As ascertained by the interviewers, on the day of observation, 18 of the 58 patients (30%) seen by PMPs were given injections. Of the 9 PMPs, 7 were storing syringes (4 glass and 3 disposable). Three administrations of an injection were actually observed. The indications were pruritus of the scalp, wheezing and pain. All three were given with disposable syringes but in no case did the technique of administration follow prescribed guidelines.

Two of the 9 PMPs did not know of any disease transmitted through injections. The rest knew about AIDS, and two knew about jaundice. The syringes were usually disposed of in a nearby drain or dumped outside the village. Of the 9 practitioners, 4 said that patients did not ask for injections on their own.

DISCUSSION
This study was conducted in only one village, which is one of the biggest and richest in the state of Haryana. The sample size was small. The history of injection use was ascertained at the family level from an adult member and not from individuals. There was an assumption that an injection would be discussed in the family and respondents would know the actual injection use in the family.

In a study on rational drug use in the Satara District of Madhya Pradesh, Phadke found that 21.6% of injections prescribed by rural private doctors were unnecessary. If all unqualified doctors were included, then this went up to 42.1% of injections.7 In Pakistan, 49% of the patients visiting a university clinic received an injection and the number of injections per person per year was 8.5.8 In our study, on the day of observation of the doctor, only 30% were given injections and the number of injections per person per year was estimated at 2.5. We did not study the appropriateness of injection use. Regarding the safety of injection, all three observed injections were given using disposable syringes, although the technique of administration was wrong in all of them. The estimate for India by Simonsen et al. based on exploratory surveys was 1.2 injections per patient per year which is about half of our estimate.4 For the proportion of outpatients receiving injections, the estimate was 33%–50%, which is similar to that in our study.

One important reason for the high use of injections is the belief of the health care provider that it is preferred by the community. In our study, the majority of respondents (54%) preferred oral medications when told that both were equally effective, while in the study from Pakistan 84% preferred injections.9 In both the studies, almost 90% of the injections were given on the advice of doctors.

In conclusion, the use of injections in the study area was high, none of the PMPs was qualified in modern medicine, all the PMPs were using injections and none of them was following the correct technique. In general, the community did not ask for injections. Their awareness about the risks of injections was low but they were willing to buy disposable syringes and needles. Thus, a need for an intervention addressing unnecessary use and the safety of injections is obvious. The PMPs provide service where government services are often not accessible. Therefore, they need to be involved in any proposed intervention. Training programmes are required to improve injection techniques and to rationalize the need for injections.

REFERENCES