An intervention improving prescribing practices and monitoring drugs availability in a district

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ABSTRACT

To improve the quality of health care in Nepal, supervision/ monitoring involving periodic visits by the district supervisor to health facilities (top-down approach) is in practice. It is not objectively implemented because of time and financial constraints and terrain of the country. To assess the effectiveness of a pre-tested strategy i.e. peer-group discussion with self-assessment piloted through the district health system in improving quality of care. A pre-post pilot study was conducted in 41 PHC facilities of Chitwan district of Central Nepal. The intervention included small- group training to prescribers followed by peer-group discussion with self-assessment data. It involved visit of in-charges from health facilities to district level regular meeting with self-assessment data on the treatment of four targeted health problems and also the availability of drugs of their health facilities as well as from health facilities which were under their supervision (bottom-up approach). In under-five children, there was a significant improvement in use of antimicrobials in diarrhoea, paracetamol alone and antibiotics in no pneumonia, and co-trimoxazole or amoxycillin alone or with paracetamol in pneumonia. The use of benzyl benzoate or gamma benzene hexachloride alone and antibiotics in scabies were also significantly improved. The peer-group discussion, a bottom-up approach of supervision/monitoring implemented through district health system improves the prescribing practices and availability of drugs in the district.

Keywords: improved prescribing, drugs availability, supervision/monitoring, bottom-up approach, PHC outlets

INTRODUCTION

Developing countries are facing problems to deliver quality health services through primary health care outlets. People's access to essential drugs and their proper use are important elements of quality of care at health care outlet.

Inappropriate prescribing particularly reduces the quality of medical care and leads to the waste of resources. Improving drug use would have important financial and public health benefits. To address the problem for improving prescribing, a variety of educational, managerial, financial and regulatory strategies have been tried both in developing and developed countries. The educational interventions are most commonly used and include standard treatment guidelines or clinical guidelines, flow charts and bulletins. Main methods used to introduce them to prescribers include face-to-face education, seminar or workshop, peer review and feedback and in-service training/ supervision. Similarly, the managerial interventions include essential drug list, course-of-therapy packaging and pre-printed order forms. The regulatory strategies involve banning of unsafe drugs and limiting the import of drugs in the market. The financial interventions include different kinds of drug financing.[1] In improving the prescribing practices, various authors have concluded that the best effect occurs when combining strategies.[2-5]

For promoting therapeutically effective and economically efficient prescribing, different countries have adopted standard treatment schedules (STS). When implemented effectively, STS offers advantage to patients (more consistency and treatment efficacy), providers (gives an expert consensus, standard care and basis for monitoring), supply managers (makes demand more predictable and allows pre-packs) and health policy makers (provides focused for therapeutic integration of special programs and promotes efficient use of funds). But effective implementation is the greatest challenge in introducing STS.[2] Different strategies have been tested in different countries for the effective implementation of STS.[6] Experiences have also shown that the compliance with the guidelines increases with use of different types of strategies.[2,7,8] Different strategies are appropriate in different contexts.

In Nepal also, various strategies have been tested and found effective to improve the prescribing and dispensing practices.[3,9] The educational intervention, the training has not been effective in improving the

prescribing practices in the public sector. However, when training is combined with a managerial intervention i.e. peer-group discussion, it becomes effective in improving prescribing practices of paramedics in several practices including diarrhoea, no pneumonia, pneumonia and scabies complying with STS.[3,10]

Obviously, urgent need was felt to develop an effective strategy to implement STS in health facilities to promote the quality use of medicines. The strategies undertaken were training, training with self-assessment and peer discussion[10]. The study found that a combined strategy (training plus self assessment and peer group discussion) was effective compared to training alone to improve the prescribing practices. The strategy aimed at improving the conventionally adopted supervision /monitoring approach in the health system. The conventional approach involved periodic visits by the district supervisors to the health facilities (top-down approach), which was not objectively implemented because of time and financial constraints as well as terrain of the country. On the other hand, the tested strategy adopted a new bottom-up approach of supervision/monitoring consisting of self-assessment and peer-group discussion. The results of the study were disseminated to policy makers and health managers of the central and district levels. However, a further study undertaken after one year in the same settings to assess the continuation of the strategy and the sustainability of improved practices found that the peer-group discussion as well as the improved practices could not be sustained after completion of the project.[11,12] The exploration found that the process was not continued after completion of the study as it was considered as a research study of a non-government organisation. The problem was discussed with the central and district managers. After this, different stakeholders realised that if the strategy had been incorporated in the district programme it could be effectively continued through the district health care system. Further meetings with the managers decided to pilot the tested strategy in a district, which has a plain and hilly terrain, accessibility from the capital city (Kathmandu), having Community Drug Program (CDP) and also the commitment of district manager for the implementation.

This article aims to share the experiences of pilot implementation of the strategy i.e. peer-group discussion through the district health system in improving prescribing practices and monitoring availability of drugs for common health problems.

OBJECTIVE: To assess the effectiveness of peer-group discussion in improving prescribing practices and monitoring of drugs availability in the district health system.

METHODS

It was a pilot programme with pre-post comparison; conducted in all PHC facilities of Chitwan district of central Nepal. The district was purposively selected based on the criteria mentioned above. The district has three Primary Health Care Centres (PHCCs), six Health Posts (HPs) and 32 Sub-health Posts (SHPs). Each PHCC/HP serves as Ilaka level health institution and supervises 3-4 Sub-health Posts. SHP is situated at each Village Development Committee (VDC) level. The study included all 41-health institutions of the district.

Data were prospectively collected using Carbon Copy Prescriptions (CCPs). Pre- intervention data included all prescriptions related to top four health problems between June and October 2003 from each health facility. Similarly, post-intervention data included all prescriptions between March and June 2004. Prescriptions with single diagnosis were included in the study. The top four health problems were no pneumonia, pneumonia and acute diarrhoea in children under five years and scabies in all age group.

The indicators for measuring the improvement were based on recommended treatment as per STS and common treatment practices seen in earlier studies. Thus, the prescribing practice for diarrhoea was measured by using percentage of acute diarrhoea in children below five years receiving ORS alone, and antimicrobials. Similarly, the prescribing practices for no pneumonia was measured by using percentage of no pneumonia in children below five years receiving paracetamol alone, and antibiotics. Likewise, the prescribing practice for pneumonia was measured by using percentage of pneumonia in children below five years receiving cotrimoxazole or amoxicillin alone or with paracetamol. In the similar way, the prescribing practices for scabies was measured by using percentage of scabies cases in all age groups receiving benzyl benzoate or gamma benzene hexachloride alone, and antibiotics.

The piloting also monitored the availability of key drugs at service outlets using a checklist for the targeted conditions.

Strategies for change

Self-monitoring

Each prescriber from PHCC/HP/SHP made self-assessment of the treatment given to the patients for the four targeted health problems every two months using the CCPs, generating data on prescribing practices on the basis of indicators based on STS in the pre-defined format. The in-charge of each health institution discussed the generated data with other prescribers and prepared

Table-1: Prescribing practices for diarrhoea

	Pre (n= 26) %	Post (n=36) %	Post-Pre
ORS alone	11.5	88.9	ns
Antimicrobials	80.7	5.6	s (0.001)

S=Significant, ns=Not significant

Table-2: Prescribing practices for pneumonia[1]

	Pre (n=177) %	Post (n=100)%	Post-Pre
Cotrimoxazole or Amoxycillin alone or with Paracetamol	58.2	72.0	s (0.000)

S=Significant

the self-monitoring report of the treatment for the four targeted health problems and also the availability of drugs of his/her health institution for presentation at Ilaka level (PHCC/HP level) bimonthly meeting (Ilaka peer-group discussion). After the discussion at the Ilaka level, the Ilaka in-charge prepared Ilaka Consolidation data including the treatment and availability of drugs, which was used for presentation at district level meeting (district peer-group discussion).

Peer-group Discussion

The peer-group discussion took place at regular basis i.e. every two months at Ilaka and district level. The peer-group discussion at the Ilaka level consisted of presentations by in-charges of SHPs as well as one of the prescribers from PHCC or HP. It was chaired by the in-charge of PHCC or HP. The presentation was followed by discussion among peers and feed -back by the in-charge for prescribing in accordance to STS and maintaining availability of drugs. The in-charge of each Ilaka generated Ilaka Consolidation report by incorporating self-monitoring data of the treatment and availability of drugs from all health institutions of the Ilaka for its presentation at district level peer-group discussion attended by all Ilaka in-charges.

Similarly, the Peer-group discussion at district consisted of presentation by the Ilaka in-charges followed by discussion among peers. The District Health Officer (DHO) chaired the discussion. At the end of the discussion DHO gave feed back on the findings for improvement or sustaining the practices complying with STS and maintaining availability of drugs.

Training

Training of trainers: It was small group face-to-face training and was conducted for seven participants from district health office including District Health Officer from the study district. It focused on how to conduct the training of health workers from different level of health institution, how to use the STS in the diagnosis and treatment of the three selected health problems (acute watery diarrhoea and ARI in children, and scabies in both children and adults) and how to conduct peer-group discussion. The training had nine sessions in 24 hours spread over four days. Members of INRUD, Nepal facilitated the sessions.

Training of prescribers: Twenty-one prescribers from PHCCs/HPs were trained in one group in the district centre. It focused on how to use the STS in the diagnosis and treatment of the three selected health problems, analysis of indicators of self-monitoring and how to conduct peer-group discussion. Similarly, one group training was conducted for 30 prescribers from SHPs. It also focused on how to use the STS in the diagnosis and treatment of the three selected health problems and analysis of indicators of self-monitoring. Tthe training for PHCC/HPs prescribers had seven sessions in 16 hours spread over three days. The training for SHPs prescribers had five sessions in 12 hours spread over two days. ToT participants conducted the trainings.

For the trainings, three separate Training Manuals were developed for district health staff, prescribers from PHCC/HP and prescribers from SHP. Similarly, three separate Trainer's Manuals were also developed. The manuals were designed and developed based on separate curriculum for each group. The course contents for prescribers were based exclusively on the Standard Treatment Schedule.

Operational Manual

Three separate Operational Manuals were developed for district health staff (supervisors), prescribers from PHCC/HP and prescribers from SHP.

The Operational Manual for district supervisors included how to find relevant cases for each condition in the prescription pad, how to record data on the Self-monitoring Indicator Encounter Form and how to

Table-3: Prescribing practices for no pneumonia[2]

	Pre (n=49) %	Post (n=38) %	Post-Pre
Antibiotics	22.4	10.5	s (0.003)
Paracetamol	22.4	36.8	s (0.006)

S=Significant

[1]Pneumonia and severe pneumonia

[2]Common cold and mild ARI

calculate summary indicators. It also included how to conduct peer-group discussion at district level and enter data into a District Consolidation Form.

The Operational Manual for Ilaka level prescribers was similar to the district supervisors but it included method of conducting peer-group discussion at the Ilaka level and entering data into an Ilaka Consolidation Form. The Operational Manual for Sub-health posts prescribers consisted of how to find relevant cases for each condition in the prescriptions pad, how to record data on the Self-monitoring Indicator Encounter Form and how to calculate summary indicators.

Implementation Guidelines

The working schedules were developed in consultations with DHO and CDP Unit, DHS. A prescription pad containing structured pages for prescribing, each page with a blank page for recording the prescription with carbon paper were supplied to all health facilities through the DHO, five months before the baseline.

A guideline on the use of prescription pads and storing of used prescription pads was also provided to prescribers through DHO.

Validation of process and Data

CDP focal person, programme manager and programme director did one time verification of data presented in peer-group discussion at district with CCPs. Similarly, one time verification of self-assessment data with CCPs was done at health institutions by the district supervisors. Both verifications matched the data from the source and the calculated data. INRUD representative was present as an observer in the first six district peer-group discussions and verification exercise both at the district and health institutions.

Analysis

The final results for selected indicators were expressed into percentage. The changes in the prescribing practices for the targeted conditions were determined. The effect of intervention was compared between the means of aggregated pre-post data .The difference was tested using t-test at 95.0 % significance level.

The availability of drugs in the district was calculated as average percentage for both pre and post period based on data from different health institutions.

Table-4: Prescribing practices for scabies

	Pre (n=227) %	Post (n=116) %	Post-Pre
Antibiotics	44.1	1.7	s (0.000)
Benzyl benzoate or Gamma benzene hexachloride alone	20.7	94.8	s (0.000)

s=Significant

RESULTS

Acute diarrhoea in children: A significant decrease in prescribing antimicrobials in diarrhoea and an increase in use of ORS alone has been shown in Table-1. ORS alone is recommended treatment according to STS in diarrhoea.

Pneumonia in children: A significant increase in prescribing cotrimoxazole or amoxycillin alone or with paracetamol has been shown in Table-2. Cotrimoxazole or amoxycillin alone or with paracetamol is recommended treatment in STS in pneumonia.

No pneumonia in children: Table-3 is showing a significant increase in prescribing paracetamol alone and a significant decrease in prescribing antibiotic in no pneumonia. Paracetamol alone is a recommended treatment in no pneumonia.

Scabies in all age groups: A significant increase in prescribing benzyl benzoate or gamma benzene hexachloride alone and a significant decrease in prescribing antibiotics in scabies has been shown in Table-4. Benzyl benzoate or gamma benzene hexachloride is a recommended treatment in scabies.

Key drugs availability at district: All key drugs were available in all health institutions of the district after the intervention unlike the baseline as shown in Table-5.

DISCUSSION

A study conducted in Uganda for improving compliance with STS had shown that combined strategies (training and supervision) produced improved practices greater than training alone. In Zimbabwe, adherence to STS had been shown with supervision alone but the results were not sustained. Our previous study in primary health care

Table-5: Key drugs availability at district (based on average of health institutions)

Name of Drug	Pre (n=9) %	Post (n=9) %
Amoxycillin	100.0	100.0
Benzyl benzoate/ Gamma Benzene Hexachloride	100.0	100.0
Paracetamol	74.0	100.0
Co-trimoxazole	100.0	100.0
ORS	100.0	100.0
Tetracycline	100.0	100.0
Mebendazole/ Albendazole	100.0	100.0
Ferrous Sulfate/Iron + Folic Acid	88.0	100.0

outlets of Nepal with supervision/monitoring as a strategy through district health system also showed significant improvement in prescribing in accordance with STS. However, the strategy was top-down approach and involved a supervisor and supervisee. The present strategy is an innovative bottom-up approach of supervision/ monitoring with both vertical and horizontal interaction involving supervisor and peers. It is cost-effective as it does not require extra cost for conducting the peer-group discussion at Ilaka level (as it takes place during regular meeting) and the cost of peer-group discussion at the district level is less than the cost of conventional supervision from the district to health care outlets.

Peer-group discussion is a process that involves both supervision (discussion with DHO) and monitoring. The monitoring has both forward and backward elements. The forward element involves the data even from the lowest level of health facilities to the district manager. Similarly, the backward element is feedback from the district manager to the health facilities through the in-charges.

The strategy has resulted into improved prescribing practices and supply/ availability of drugs at health institutions.

The district health system has even continued the strategy for more than three years after completion of pilot period. During this period also there has been sustained improvement in the prescribing practices and drugs availability in the district.

The results of the piloting were disseminated to the health planners at different occasions and one time to the High Level Policy Advisory Committee of Ministry of Health and Population in 2007.

The piloting of the strategy has been successful in learning the different lessons: strategy can be implemented through district health system, district health system including the manager and health workers become motivated and continued even after the pilot period was over.

The strategy peer-group discussion with self-assessment can be effectively implemented through the existing district health system for improving the prescribing practices based on the treatment guidelines and monitoring the availability of drugs.

As a recognition to the importance of the strategy, the Ministry of Health and Population has allocated the budget in this fiscal year (2009/10) for implementation of this strategy in all health facilities up to district level (Sub-health post to District hospital) of all 75 districts of the country.

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REFERENCES

1. le Grand A, Hogerzeil HV, Haaijer-Ruskamp FM. Intervention research in rational use of drugs: a review. *Health Policy Plan*1999; 14: 89-102.
2. INRUD/Nepal. National training course on rational use of drugs 2006, Training Manual Series 17.
3. Kafle KK, Shrestha N, Karkee SB, Prasad RR, Bhuju GB, Das PL. Intervention studies on rational use of drugs in public and private sector in Nepal. *Nepal Med Coll J* 2005; 7: 47-50.
4. de Lusignan S. An educational intervention, involving feedback of routinely collected computer data, to improve cardiovascular disease management in UK primary care. *Methods Infect Med* 2007; 46: 57-62.
5. Quick JD, Laing RO, Ross-Degnan DG. Intervention research to promote clinically effective and economically efficient use of pharmaceuticals: the International Network for Rational Use of Drugs. *J Clin Epidemiol* 1991; 44 Suppl 2: 57S-65S.
6. Laing R, Hogerzeil H, Ross-Degnan D. Ten recommendations to improve use of medicines in developing countries. *Health Policy Plan* 2001; 16: 13-20.
7. Grimshaw JM. Changing provider behavior: an overview of systematic reviews of interventions. *Med Care* 2001; 39 (8 Suppl 2): II2-45.
8. Wensing M, van der Weijden T, Grol R. Implementing guidelines and innovations in general practice: which interventions are effective*? Brit J Gen Pract* 1998; 48: 991-7.
9. INRUD/Nepal. Intervention test of training and supervision on prescribing practices 1995, Technical Report.
10. INRUD/Nepal. Test of strategies for implementing STS in improving use of drugs 2001, Technical Report.
11. Kafle, KK, Karkee SB, Prasad RR *et al*. Evaluation of successful intervention for sustainability and effects in post research phase. *Kathmandu Univ Med J* 2006; 4: 61-4.
12. INRUD/Nepal. Test of sustainability of strategy in implementation of STS for improving use of dugs 2002, Technical Report.