

Lessons from the field

From research to national expansion: 20 years' experience of community-based management of childhood pneumonia in Nepal

P Dawson,^a YV Pradhan,^b R Houston,^a S Karki,^a D Poudel^a & S Hodgins^a

Problem Pneumonia is a leading cause of mortality of children aged under five in Nepal. Research conducted by John Snow Inc. in the 1980s determined that pneumonia case management by community-based workers decreased under-five mortality by 28%.

Approach Female community health volunteers were selected as the national cadre to manage childhood pneumonia at community level using oral antibiotics. A technical working group composed of government officials, local experts and donor partners embarked on a process to develop a strategy to pilot the approach and expand it nationally.

Local setting High under-five mortality rates, low access to peripheral health facilities and severe constraints in human resources led Nepal's Ministry of Health to test this innovative approach.

Relevant changes Community-based management of pneumonia doubled the total number of cases treated compared with districts with facility-based treatment only. Over half of the cases were treated by the female community health volunteers. The programme was phased in over 14 years and now 69% of Nepal's under-five population has access to pneumonia treatment.

Lessons learned Community-based management of pneumonia provides a medium-term solution to address a leading cause of child mortality while the efforts continue to strengthen and extend the reach of facility-based care. Trained community health workers can significantly increase the number of pneumonia cases receiving correct case management in resource-constrained settings, with appropriate health systems' support for logistics, supervision and monitoring. Community-based management of pneumonia can be scaled up and provides an effective approach to reducing child deaths in countries faced with insufficient human resources for health.

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Introduction

Nepal is one of only five countries that have reduced under-five mortality by 50% since 1990.¹ Several strong community-based (CB) programmes² contributed to this achievement. This paper describes Nepal's efforts, starting from the mid-1980s, to develop and implement community-based management of pneumonia.

From 1986 to 1989, funded by the United States Agency for International Development (USAID), John Snow Inc. conducted research in Jumla, a remote mountainous district, to validate results from a previous study which showed a 59% ARI-specific mortality reduction with community-based treatment of childhood pneumonia.³ At baseline, the

infant mortality in Jumla was 184 per 1000 live births⁴ and pneumonia incidence was 800 cases per 1000 children per year. The Jumla research reported a 28% reduction in under-five mortality through active case finding and management of pneumonia by trained community-based project workers using oral antibiotics.⁵

Nepal's 1991 national survey⁶ found an under-five mortality rate of 121 per 1000 nationally, and 147 per 1000 in rural Nepal. The Ministry of Health (MOH), at that time, estimated the proportion of deaths due to pneumonia was 30–40%. Only 18%⁷ of expected cases of pneumonia presented to MOH health facilities. Expected cases are calculated as 30% of the under-five population, according to estimates

from the Resources for Child Health (REACH) project.⁸ This "expected case" figure is used as the denominator to calculate the proportion of children receiving treatment annually. The numerator is the actual total attendance figure (for pneumonia, severe pneumonia and very severe disease) from registers in MOH treatment facilities and communities in all programme districts. Calculations are done annually as an indicator of programme coverage.

Moving from research to programme

The magnitude of the problem, coupled with the promising findings from Jumla published in 1991, motivated the MOH to replicate CB-pneumonia

^a John Snow Incorporated, Kathmandu, Nepal.

^b Ministry of Health and Population, Government of Nepal, Kathmandu, Nepal.

Correspondence to P Dawson (e-mail: pdawson@nfh.org.np).

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treatment within the government system. A technical working group consisting of government staff, local specialists and partners from the United Nations Children's Fund (UNICEF), WHO, USAID and John Snow Inc. was established in 1993.

The female community health volunteer (FCHV) cadre was identified by the technical working group to manage childhood pneumonia at community level using oral antibiotics. FCHVs are local women, selected by their communities, trained by the MOH to promote healthy behaviours and provide selected health services in their villages such as providing high-dose vitamin A capsule supplementation semi-annually to children (6–59 months). They receive the standard government allowance for time spent in training and review meetings, but no other compensation other than ad hoc in-kind community support. Non-financial incentives that include increased social status and public recognition by their community remain the most important motivators. The CB-pneumonia initiative built on the FCHVs' positive experience gained from the vitamin A programme.

Testing Jumla findings in a programme setting

In 1993, the technical working group decided to strengthen acute respiratory infections (ARI) case management at the health facility level and extend assessment of pneumonia cases to the community level through FCHVs. Some government officials questioned the ability of semi-literate volunteer women to correctly diagnose and treat pneumonia. The group decided, therefore, to test two intervention arms: "treatment" and "referral". In both arms, FCHVs were trained to assess children for danger signs requiring referral according to a WHO algorithm. They also used a timer to count respiratory rate, to classify sick children (0–59 months of age) with cough or difficult breathing as having pneumonia or not. In the "treatment" arm, children aged 2–59 months with only fast breathing (50 breaths or more per minute) were treated at home with co-trimoxazole and reassessed on the third day. Children whose condition deteriorated or did not improve were then referred. In the "referral" arm, children aged

2–59 months with fast breathing were referred to the nearest health facility. In both arms, all sick infants under 2 months of age were referred to the nearest health facility. Home care advice was given in both arms.

WHO, UNICEF and USAID supported the development of technical guidelines for programme implementation. UNICEF conducted a focused ethnographic study to understand community-perceived danger signs of pneumonia and care-seeking practices. Training and behaviour-change communications materials were developed by members of the technical working group. To address the low literacy level of some FCHVs, extensive effort was given to developing pictorial training manuals, educational materials and reporting booklets. This preparation phase took place in 1993–94.

Training began in June 1995 involving role play and practical skills development. FCHV supervisors were included in training to strengthen their links with the FCHVs for future follow-up and field monitoring. Four districts were selected for the pilot intervention, two "treatment" and two "referral", with a total of 1497 FCHVs and 525 health facility staff trained. In all four districts, health facility staff were trained in both pneumonia case treatment and programme management to ensure that FCHVs received necessary supportive supervision, feedback and replenishment of supplies. District health office staff were trained on monitoring and supervision for follow-up and documentation. Mothers' group and village leader orientations were held in all villages to encourage prompt careseeking and local support.

WHO programme evaluation

In January 1997, WHO supported an evaluation of the programme, including quantitative and qualitative assessments of FCHV performance.⁹ In the classification of all ARI cases, there was overall agreement for 81% (232/285) of cases (this figure represents total agreement, i.e. "total number of cases where surveyor and FCHV classification agreed/total number of cases assessed") between the FCHVs and the surveyors.

For "no pneumonia" cases there was agreement for 95% (196/206). When classification was correct, the FCHVs' choice of treatment was always correct.

There was minimal evidence of misuse of antibiotics, with only 3% (3/116) of children given antibiotics when not indicated.

The proportion of expected pneumonia cases that received treatment almost doubled in the two "treatment" districts. At baseline, nationally, 18% (164 090/903 661) of expected cases received treatment at MOH health facilities. Analysis of first-year implementation data in two "treatment" districts revealed that 35% (11 665/33 415) of expected cases received treatment; 16% (5415/33 415) at the health facilities and 19% (6250/33 415) from the FCHVs. There was also an increase in the number of children with severe pneumonia who received treatment at health facilities in the "treatment" model. There was no increase in the number of treated pneumonia cases in the "referral" districts. These findings, together with strong community acceptance of FCHV treatment, led to a recommendation for cautious expansion of the treatment model.⁸

Expansion phase

In 1997, the two "referral" districts were converted to "treatment" and the programme has gradually expanded. By 2007, 42 of Nepal's 75 districts were included, where 69% of the population of children aged less than 5 years reside.¹⁰ (The total under-five population in 42 programme districts is estimated to be 2 508 917. This is used as the numerator, with the denominator being the total estimated under-five population in all 75 districts (3 633 687).¹⁰)

The programme merged with community-based Integrated Management of Childhood Illness (CB-IMCI) in 1999, and CB-management of pneumonia has remained a strong core component. Access to care has increased, especially in more remote villages and districts. Since the programme began in 1995, more than half of all treated cases received treatment from FCHVs. For example, from July 2005 through June 2006, 344 974 children with pneumonia were treated in programme districts by the public sector. This figure represents 56% (344 974/615 190) of expected pneumonia cases receiving treatment in programme districts; 32% (196 065/615 190) were treated by FCHVs and 24% (148 909/615 190)

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by health facility-based workers. In this same period, 33% (208 663/623 586) of expected pneumonia cases were treated at health facilities in non-programme districts. In most communities, treatment was provided free of charge. This assured equity, with more disadvantaged members of society able to access care for childhood pneumonia.

In 2005–2006, fewer than 0.2% (56 of a sample of $n = 30\ 007$ cases reviewed by programme supervisors) of treated children met criteria requiring third-day referral, as most improved on co-trimoxazole treatment. As this proportion has remained stable, there is no evidence of emerging co-trimoxazole resistance.

Quality of care provided by the FCHVs is regularly monitored by district and partner staff and remains high. Standardized checklists are used and immediate feedback given. Community-based pneumonia treatment data are part of the government's routine Health Monitoring Information System.

Using Sazawal & Black's meta-analysis figures,¹¹ an estimated 6000 lives are currently saved each year through this intervention in Nepal. Thus, it is likely that CB pneumonia case management contributed to Nepal's under-five mortality reduction during the period 2001–2006.¹² When nationwide expansion is complete, approximately 10 200 lives will be saved annually.

Lessons learned

Nepal started with a considerable advantage, having documented the effectiveness of CB-pneumonia case management in Jumla. In-country data influenced high-level decision-makers to embark on a scalable pilot programme. Every new expansion phase, however, required new MOH approvals. It was only after CB-pneumonia case management merged with the CB-IMCI programme that expansion became part of routine annual programming. Other countries should accept the existing evidence that clearly demonstrates that community-based workers can effectively manage pneumonia.

The presence of the established FCHV cadre in Nepal facilitated implementation of a successful CB pneumonia treatment programme. The cadre

Box 1. Summary of lessons learned

- Community-based management of pneumonia provides a medium-term solution to address a leading cause of child mortality while the efforts continue to strengthen and extend the reach of facility-based care.
- Trained community health workers can significantly increase the number of pneumonia cases receiving correct case management, in resource constrained settings, with appropriate health systems' support for logistics, supervision and monitoring.
- Community-based management of pneumonia can be scaled up and provides an effective approach to reducing child deaths in countries faced with insufficient human resources for health.

was already recognized and accepted in the communities and gained considerable status by treating pneumonia. Many FCHVs had personally experienced loss of a child to pneumonia, making them highly motivated to identify and treat cases. Other countries should carefully consider whether it is possible to establish such a cadre or whether existing outreach workers could take on this role.

Some well-functioning health systems are critical. The uninterrupted supply of antibiotics, timers and recording forms for FCHVs and health facilities is essential to maintaining FCHV credibility in the community. Supportive supervision and review meetings are key to assuring quality of care, maintaining motivation, and providing on-the-job refresher training.

Countries need a tenacious advocacy group to establish a permissive policy, which allows exploration of community-based treatment. With this policy, a model programme should be developed in one or two districts to demonstrate improvement in treatment rates, safety and acceptability. Using this experience, a national plan can be developed. The lessons learned are summarized in Box 1.

Leadership and management

Strong and sustained leadership from the MOH and donor partners facilitated the start-up of this programme and kept it on track during the early years. There is now sufficient commitment and momentum among a much larger group of partners to complete national expansion, targeted to reach all 75 districts by 2009. The MOH now contributes over 50% of the annual CB-IMCI programme budget for the expansion of CB-pneumonia management.¹³

Remaining challenges

Nepal is among few countries in the world on track to meet its Millennium Development Goal (MDG) 4. Community-based interventions, through FCHVs, are central to this success. In addition to CB-management of pneumonia, they also play an important role in other key child survival interventions: vitamin A supplementation, immunization, zinc and oral rehydration solution for diarrhoea management, improved birth spacing and breastfeeding.

The next challenge is to increase and maintain high coverage of these key interventions while expanding new approaches to reduce neonatal mortality. Other countries in resource-constrained settings that are struggling to reach MDG 4, can benefit from Nepal's experience of bringing services closer to the community.¹⁴ ■

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Résumé

De la recherche au développement national : 20 ans d'expérience de la prise en charge au niveau communautaire de la pneumonie de l'enfant au Népal

Problématique La pneumonie est l'une des principales causes de mortalité chez les moins de 5 ans au Népal. Les recherches menées par John Snow Inc. dans les années 80 ont déterminé que la prise en charge des cas de pneumonie par des agents communautaires avait fait baisser la mortalité des moins de 5 ans de 28 %.

Démarche Des volontaires féminins à vocation sanitaire ont été sélectionnés dans la communauté pour constituer le cadre national de la prise en charge communautaire des pneumonies de l'enfant par des antibiotiques oraux. Un groupe technique composé de fonctionnaires, d'experts locaux et de partenaires donateurs a entrepris la mise au point d'une stratégie pour le pilotage et le développement à l'échelle nationale de cette démarche.

Contexte local La forte mortalité des moins de cinq ans, le manque d'accès aux centres de santé périphériques et les graves contraintes pesant sur les ressources humaines ont conduit le Ministère de la santé du Népal à tester cette démarche innovante.

Modifications pertinentes La prise en charge au niveau communautaire de la pneumonie a multiplié par deux le nombre total de cas traités par rapport aux districts ne disposant que

du traitement en établissement. Plus de la moitié des cas ont été traités par les volontaires féminins de la communauté. Le programme a été introduit progressivement sur 14 ans et actuellement 69 % des moins de cinq ans au Népal ont accès au traitement contre la pneumonie.

Enseignements tirés La prise en charge au niveau communautaire de la pneumonie fournit une solution à moyen terme pour répondre à cette cause majeure de mortalité chez l'enfant, tandis que les efforts se poursuivent pour renforcer et élargir la desserte des soins en établissement. La présence d'agents de santé communautaires formés peut accroître notablement le nombre de cas de pneumonie bénéficiant d'une prise en charge correcte dans les pays à ressources limitées, moyennant un appui approprié du système de santé en termes de logistique, de supervision et de surveillance. Cette prise en charge au niveau communautaire de la pneumonie peut être élargie et fournit une approche efficace pour réduire la mortalité de l'enfant dans les pays confrontés à une insuffisance des ressources humaines pour la santé.

Resumen

De la investigación a la expansión nacional: 20 años de experiencia de tratamiento comunitario de la neumonía en la niñez en Nepal

Problema La neumonía es la principal causa de mortalidad entre los menores de cinco años en Nepal. Según las investigaciones realizadas por John Snow Inc. en los años ochenta, el tratamiento de los casos de neumonía por agentes comunitarios redujo en un 28% la mortalidad de menores de 5 años.

Enfoque Se seleccionó a mujeres voluntarias de salud comunitaria para constituir un cuadro nacional dedicado a tratar la neumonía en la niñez a escala comunitaria utilizando antibióticos orales. Un grupo de trabajo técnico integrado por funcionarios públicos, expertos locales y donantes emprendió un proceso de formulación de una estrategia destinada a aplicar experimentalmente ese enfoque y expandirlo a nivel nacional.

Contexto local Las altas tasas de mortalidad de menores de cinco años, el bajo acceso a los centros de salud periféricos y la grave escasez de recursos humanos llevaron al Ministerio de Salud de Nepal a ensayar ese innovador enfoque.

Cambios destacables El tratamiento comunitario de la neumonía permitió duplicar el número de casos tratados en comparación con los distritos donde sólo se administró tratamiento en los centros

sanitarios. Más de la mitad de los casos fueron tratados por voluntarias de salud comunitaria. El programa se escalonó a lo largo de 14 años, y actualmente el 69% de la población de Nepal menor de cinco años tiene acceso al tratamiento de la neumonía.

Enseñanzas extraídas El tratamiento comunitario de la neumonía constituye una solución a medio plazo para abordar una causa relevante de mortalidad en la niñez, mientras prosiguen los esfuerzos tendentes a fortalecer y ampliar el alcance de la atención basada en los centros sanitarios. El recurso a agentes de salud comunitarios formados al efecto permite aumentar considerablemente el número de casos de neumonía tratados correctamente en los entornos con recursos limitados, siempre que se cuente con un apoyo apropiado de los sistemas de salud en lo relativo a la logística, la supervisión y la vigilancia. El tratamiento comunitario de la neumonía se puede extender masivamente y constituye una estrategia eficaz para reducir la mortalidad en la niñez en los países que afrontan problemas de falta de personal sanitario.

ملخص

من البحوث إلى التوسع الوطني: 20 عاماً من الخبرة في المعالجة المجتمعية للالتهاب الرئوي للأطفال في نيبال

الأسلوب: تم انتقاء متطوعات من العائلات في صحة المجتمع بوصفهن الكادر الوطني المسؤول عن معالجة الالتهاب الرئوي للأطفال على مستوى المجتمع باستخدام المضادات الحيوية الفموية. وقد شرع فريق عمل تقني يتألف من مسؤولين حكوميين، وخبراء محليين، وشركاء مانحين، في وضع استراتيجية للاقتداء بأسلوب المعالجة وتوسيع نطاقه على المستوى الوطني.

المشكلة: الالتهاب الرئوي سبب رئيسي لوفيات الأطفال الذين هم أقل من عمر خمس سنوات في نيبال. وقد أشارت البحوث التي أجرتها شركة جون سنو في ثمانينات القرن الماضي إلى أن معالجة حالات الالتهاب الرئوي على يد العاملين في صحة المجتمع أدى إلى انخفاض وفيات الأطفال دون سن الخامسة بنسبة 28%.

الدروس المستفادة: إن المعالجة المجتمعية للالتهاب الرئوي تمثل حلاً متوسط الأجل في التصدي للمسبب الرئيسي لوفيات الأطفال، في الوقت الذي تتواصل فيه الجهود من أجل تعزيز وتوسيع فرص الحصول على الرعاية في المرافق الصحية. ويمكن للعاملين في صحة المجتمع المدربين أن يرفعوا بشدة من عدد حالات الالتهاب الرئوي التي تتلقى المعالجة السليمة في الأماكن المحدودة الموارد، وذلك عن طريق الدعم اللوجستي المناسب الذي تقدمه النظم الصحية، والإشراف والرصد. ومن الممكن الارتقاء بالمعالجة المجتمعية للالتهاب الرئوي، إذ تشكل أسلوباً فعالاً للحد من وفيات الأطفال في البلدان التي تعاني من عدم كفاية الموارد الصحية البشرية.

الموقع المحلي: أدى ارتفاع معدلات الوفيات بين الأطفال دون الخامسة، وانخفاض فرص الحصول على خدمات المرافق الصحية المحيطة، والنقص الحاد في الموارد البشرية، إلى قيام وزارة الصحة في نيبال باختبار هذا الأسلوب المبتكر.

التغيرات ذات الصلة: أدت المعالجة المجتمعية للالتهاب الرئوي إلى مضاعفة العدد الكلي للحالات التي تلقت المعالجة ضعفين، بالمقارنة مع المناطق التي تتم فيها المعالجة في المرافق فقط. وقد عولج أكثر من نصف الحالات على يد متطوعات من العاملات في صحة المجتمع. ونفذ البرنامج على مراحل على مدى أكثر من 14 عاماً، وأصبحت المعالجة من الالتهاب الرئوي متاحة حالياً لـ 69% من أطفال نيبال الذين هم أقل من عمر 5 سنوات.

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