



中華人民共和国  
予防接種事業強化プロジェクト  
事前調査団報告書

平成11年7月

国際協力事業団  
医療協力部

## 序 文

中華人民共和国（以下、中国）衛生部は、子供の疾病対策のため予防接種事業の強化を重要政策として位置づけていますが、経済発展の遅れている中国内陸部を中心として、予防接種に必要な機材が十分整備されていないことや、スタッフの養成が十分なされていないなどの状況があり、また、注射の安全性が十分確保されていないため、予防接種に起因する感染症が問題視されています。

かかる背景のもと、中国政府は、貧困地域 6 省・自治区を対象とする本件プロジェクトの協力を日本国政府に要請してきました。

これを受け国際協力事業団は、プロジェクト方式技術協力による注射の安全の確保や予防接種事業の強化にかかるプロジェクトの実施の可能性について調査すべく、1999年 6 月20日から1999年 6 月30日までの日程で、国立国際医療センター研究所長 吉倉廣氏を団長として事前調査団を派遣しました。

本報告書は、同調査団の調査結果を取りまとめたものです。ここに、本調査にあたりまして、ご協力を賜りました関係各位に対しまして深甚なる謝意を表します。

平成11年 7 月

国際協力事業団  
理 事 阿 部 英 樹

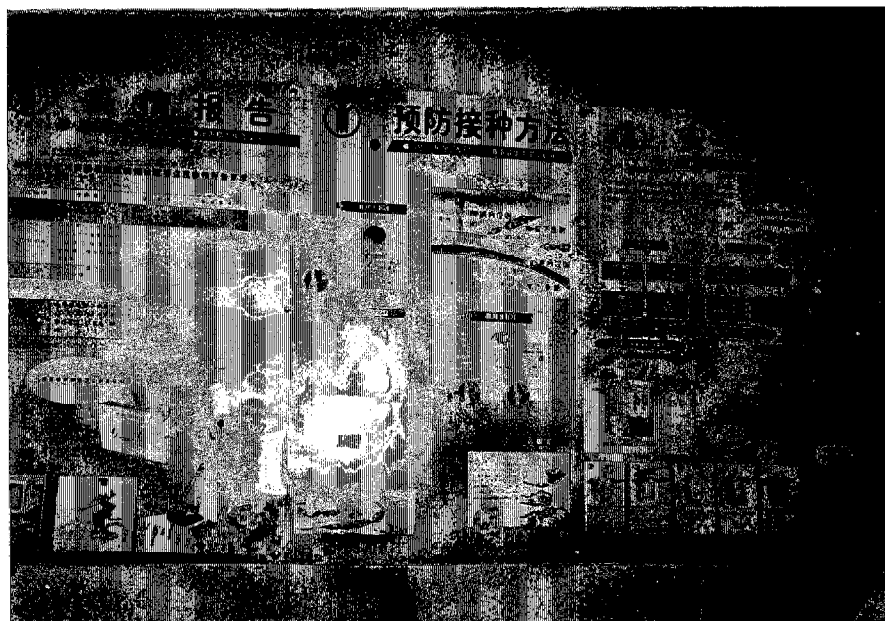


写真1 予防接種の方法、  
注射の滅菌方法等がポスター  
で掲示されている。  
(陕西省卫生防疫センター)



写真2 陕西省卫生防疫セ  
ンターにおける予防接種場  
点



写真3 陕西省西安市長安  
県医院における予防接種点



写真4 使用後の使い捨て注射器。段ボールに捨てられている状態。(陝西省西安市長安県医院)



写真5 陝西省長安県大峪鎮衛生院



写真6 鎮衛生院の裏には、使用済みの注射器、針等が捨てられている。(陝西省長安県大峪鎮衛生院)



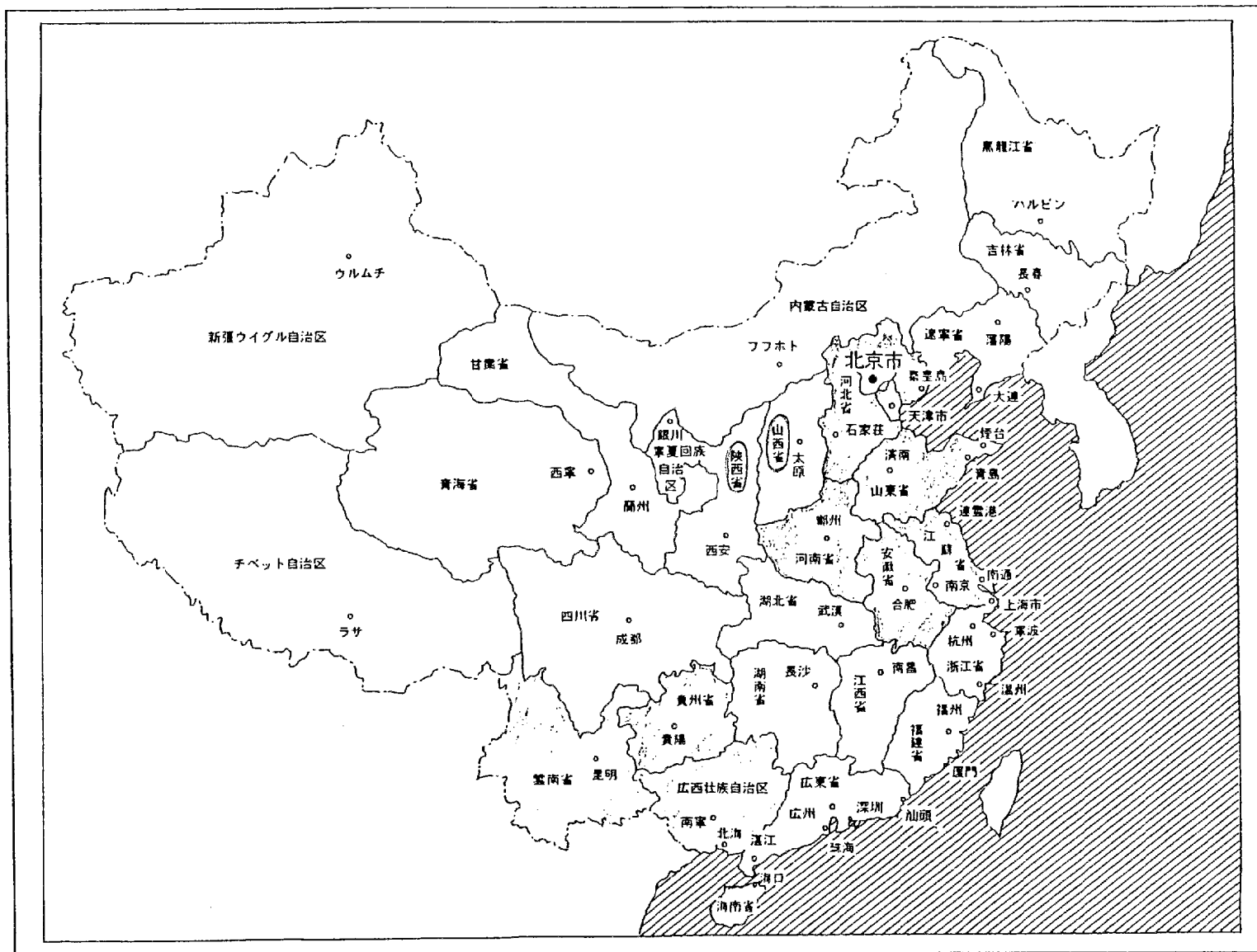
写真7  
山西省類煩県蔡家庄村の衛生室。予防接種に関する記録状況を確認。



写真8  
山西省類煩県 郷衛生院  
山西省衛生庁関係者と。

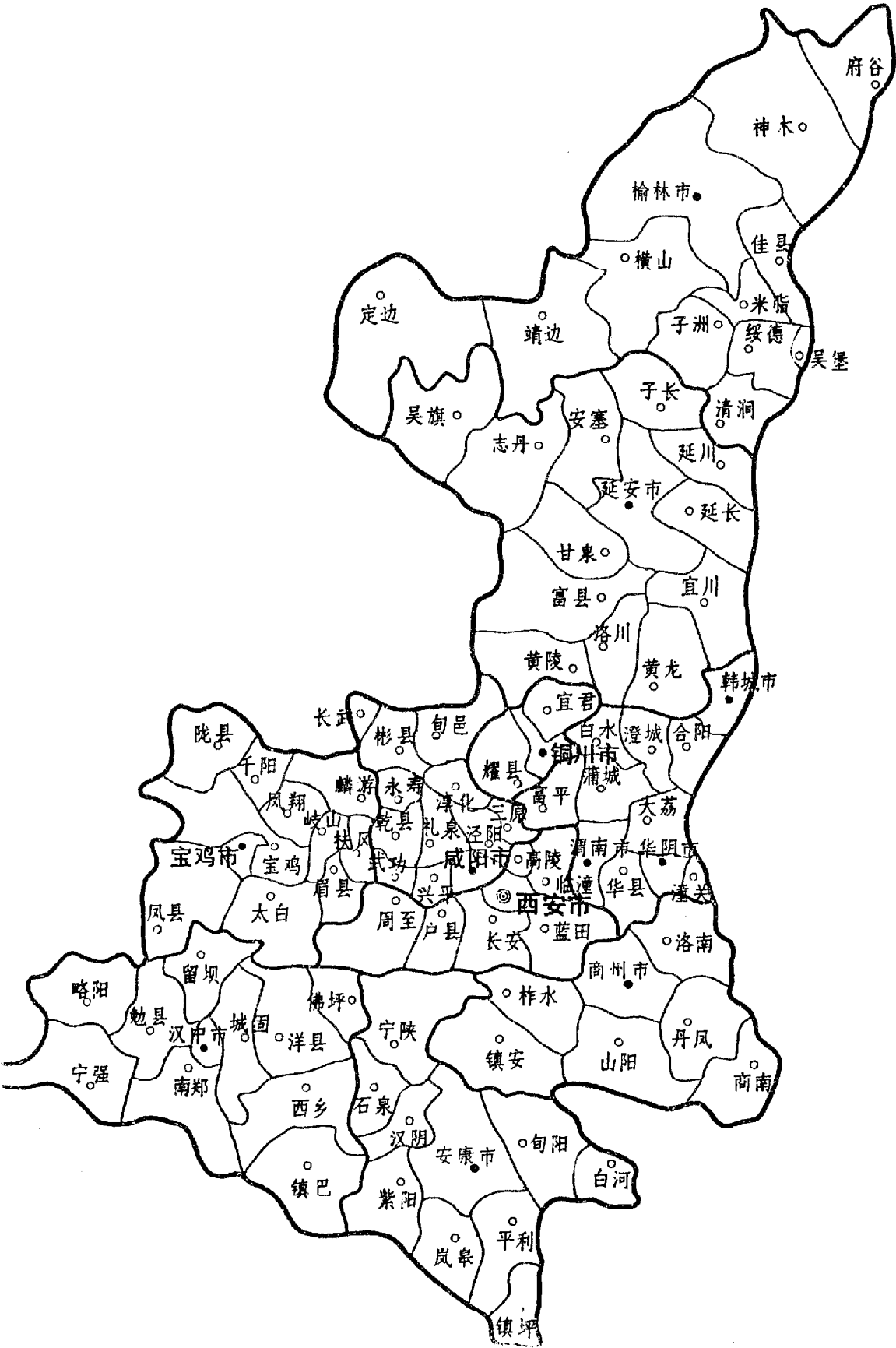


写真9  
ミニッツ署名。衛生部。



[illegible]

陕西省





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## 1 . 事前調査団派遣

### 1 - 1 調査団派遣の経緯と目的

1999年12月に終了予定であるポリオ対策プロジェクトの後継プロジェクトとして、中国政府より、中国の貧困地域を対象とした予防接種事業（EPI）の質を改善し、安全注射の普及とともにワクチンの定期接種率を高めること、また麻疹などのEPI対象疾病の発病を減少させること、さらにはEPI対象疾病のコントロールに必要なサーベイランスの強化を図ることを目的とし、標記プロジェクトの要請が中国側からなされた。

中国側の要請を受け、本事前調査団においては、以下の項目について内容の確認、調査を行った。

- (1) 要請背景の確認
- (2) 協力対象分野の現状
- (3) 本プロジェクトの中国側実施体制
- (4) 技術協力の基本計画の概略策定
  - ・ 技術協力の範囲および規模（ 協力対象分野および省の絞り込みを含む ）
  - ・ 目標の設定
  - ・ 日本側投入計画

### 1 - 2 調査団の構成

	担 当	氏 名	所 属
団長	総括	吉倉 廣	国立国際医療センター 研究所所長
団員	EPI	吉武克宏	国立国際医療センター 派遣協力課 課長
団員	サーベイランス	村上 仁	国立国際医療センター 派遣協力課
団員	技術協力	地神一美	外務省経済協力局技術協力課 課長補佐
団員	通訳	田中美佐子	(財)日本国際協力センター
団員	協力計画	鍛冶澤千重子	国際協力事業団医療協力部医療協力第一課

## 1 - 3 調査日程

日順	月 日	曜日	移 動 お よ び 業 務	宿泊先
1	6月20日	日	10:40 成田発 (JL781) 13:15 北京着	北京
2	6月21日	月	10:00 JICA中国事務所表敬 11:00 日本大使館表敬 14:30 衛生部表敬 16:00 ポリオ対策プロジェクトオフィス訪問、 中国国家医学科学院 (CAPM) 表敬	北京
3	6月22日	火	9:00 北京 (X2119) 10:35 西安 西安市 (空路) 14:00 ~ 18:00 陝西省防疫站計画免疫科表敬および調査	西安
4	6月23日	水	8:00 ~ 10:00 陝西省西安市臨潼区防疫站 11:00 ~ 13:00 陝西省西安市臨潼区油槐郡衛生院、北浚村村医 15:00 ~ 16:00 陝西省長安県防疫站 17:00 ~ 18:00 陝西省長安県大峪鎮衛生院、大峪村医	西安
5	6月24日	木	10:00 陝西省西安市意見交換 11:00 陝西省副秘書長表敬 14:40 西安 (WH2119) 16:10 北京	北京
6	6月25日	金	10:00 WHO表敬 15:00 団内打合せ	北京
7	6月26日	土	7:00 ~ 12:00 北京 山西省太原市 (陸路) 14:30 山西省副省長表敬訪問 15:00 山西省防疫站表敬および意見交換	太原
			< 地神団員 > 北京 瀋陽 (空路) 中日医学教育センター臨床医学教育プロジェクト視察	瀋陽
8	6月27日	日	10:00 ~ 11:00 山西省太原市類煩県防疫站意見交換および視察 12:00 ~ 13:00 山西省太原市類煩県 郷、蔡家庄村 15:00 ~ 15:30 山西省太原市防疫站視察 16:00 ~ 17:00 山西省および太原市意見交換、太原副市長表敬	瀋陽
			< 地神団員 > 瀋陽 14:25 NH948 関空 19:25、関空 20:55 NH148 羽田 21:55	
9	6月28日	月	7:00 ~ 12:00 太原 北京 (陸路) 15:00 衛生部とのミニッツ協議	北京
10	6月29日	火	9:30 衛生部協議、ミニッツ署名 16:30 大使館報告	北京
11	6月30日	水	11:00 JICA事務所報告 14:50 北京発 (JL782) 19:10 成田着	

## 1-4 主要面談者

### (1) 中国側関係者

#### 1) 衛生部

王 釗	疾病控制司 司長
高細水	国際合作司 副司長
慕英英	国際合作司 双辺処処長
于竟進	疾病控制司 免疫処処長
周 軍	疾病控制司 免疫処副処長
耿京喜	疾病控制司
周士坤	疾病控制司
劉士強	疾病控制司

#### 2) 中国予防医学科学院

王克安	院長
吳宣群	副院長
邵瑞太	副院長
張礼璧	国家ポリオ実験室 主任
朱 除	計画免疫技術指導センター
王莉霞	計画免疫技術指導センター
李芸星	計画免疫技術指導センター
王曉祺	外事処

#### 3) 山西省

王 昕	副省長
趙震寰	衛生庁長
李俊峰	衛生庁副庁長
李書凱	衛生庁疾病控制処処長
王志浩	衛生庁衛生防疫站站長
翟如方	衛生庁衛生防疫站計画免疫科科长
超光芳	衛生庁衛生防疫站疾病検査科
李京岩	衛生庁衛生防疫站弁公室主任
賽普蒲	衛生庁衛生防疫站弁公室副主任
霍潤德	太原市人民政府副市長
李瑞瑜	太原市衛生局局長
温耀春	太原市衛生局副局長

趙光文	太原市衛生防疫站站長
魏王貨	太原市衛生局防疫科長
韓子仁	太原市結核医院主任醫師
朴惠玲	太原市衛生防疫站計畫免疫科長

4) 陝西省

陳嘉楨	陝西省政府秘書長
劉愛梅	衛生庁長
耿慶義	衛生庁副庁長
呂永傑	衛生庁衛防処副処長
郝慶主	衛生庁衛防処副処長
王宏星	衛生庁衛防処主任科員
王敬軍	衛生防疫站站長
彭有源	衛生防疫站副站長
劉西珍	衛生疾病防疫站計畫免疫科科長
張立城	西安市衛生局副局長
高建設	西安市臨潼区衛生局防疫站長
丁永志	西安市臨潼区衛生局防疫站計畫免疫科

(2) 日本側關係者

1) 日本大使館

依田 泰	一等書記官
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2) JICA中国事務所

松澤憲夫	所長
神谷克彦	次長
川島真佐子	所員

## ２．要請の背景と内容

1998年4月、中国衛生部は、ポリオ対策プロジェクト後継プロジェクトとして、貧困地域の予防接種事業（EPI）強化と国境地域のポリオ対策支援の継続を主な内容としたプロジェクトの検討を日本側に打診した。

中国が正式にEPIの実施を打ち出したのは1970年代末であり、1980年代に入って、国の統一の児童免疫スケジュールの策定とコールドチェーンのシステムの整備に伴い、全国規模で計画的かつ統一したスケジュールによる予防接種（BCG、DPT、麻疹、ポリオ）が実施されるようになった。それまで年に2回（冬期および春期）の予防接種の形式が大幅にかわったことにより、省、県、郷鎮を単位とする免疫接種率は85%に達し、子供の健康を脅かすEPIの対象疾患は効果的にコントロールされるに至った。

予防接種にかかわる各種計画、方針等が出されており、免疫接種率が高い水準が維持されているが、ここ近年全国的に各レベルでのEPIの諸問題が露呈し予防接種サービスが質的に低下しており、特に中国国内の経済的な地域間格差の拡大に伴い中国国内のEPI事業にも貧困地域を中心としてEPI事業の弱い地域があらわれてきている。

そのような背景のもと、山西省、陝西省、寧夏回族自治区、甘肅省、青海省、内モンゴル自治区を対象として、以下の協力分野の要請が1998年夏中国衛生部から提出があげられた。

- (1) 国家レベルおよび対象省のEPI接種事業に対する監督と管理能力を強める。
- (2) 定期免疫の仕事の質を改善し、安全注射を普及させる。
- (3) ワクチンの貯蔵と運搬能力を高める。
- (4) 国家レベルと省レベルのEPI疾病の実験室診断の能力を高める。
- (5) 麻疹などEPI疾病のサーベイランス能力と流行に対する速やかな対応能力を強める。
- (6) 各レベルのEPI担当者に対してセミナーを開催する。
- (7) ポリオ根絶で得た成果を強化し、必要に応じて継続的に国境地域、他のハイリスク地域のポリオサーベイランスを支持する。

### ３．開発計画の現状との関連

#### (1) 貧困地域の開発

「第9次5カ年計画」(九五計画)(1996～2000年)「2010年長期目標要綱」(1996年制定)によると、中国は1978年以降の改革開放により、高成長と低成長のサイクルを繰り返しながらも、平均成長率10%に近い数字を達成し、めざましい発展を遂げてきた。しかし現状ではマクロ経済面での不安定要因、貧困・地域間格差の拡大、社会開発分野での取り組みの遅れ、長期的な農産物需給での不安定要因、環境の悪化などの問題が顕著になっている。

「九五計画」、「2010年長期目標要綱」(1996年制定)に基づき、2010年までの15年間の開発計画の方針のなかでも、貧困・地域間格差の問題については、地域経済の調和のとれた発展を堅持し、地域発展格差を解消するということを打ち出している。

日本の対中援助は、「貧困・地域間格差の解消」を重点分野とし、中西部の特に貧困な地域を重点とし援助を展開するべきという方針が、第2次国別援助研究会より出されており、本プロジェクトはその方針に基づき形成されている。

本プロジェクトの対象地域として要請が出ている6省・自治区には59地区408県が存在するが、そのうち、国家級貧困県は156県であり、省全体としても経済状況が比較的遅れている。経済状況の困難なことから、貧困地区では、コールドチェーンの整備ができない、スタッフの養成にかかる資金が不足しているなど、予防接種事業(EPI)を維持・強化していくうえでの障害となっている。このような貧困地域において、限られた予算のなかで実施可能なEPIのモデルをつくることは重要と考える。

#### (2) 予防接種事業

EPIに関しては、WHO/UNICEFの予防接種拡大計画に基づき1980年代より計画的なEPIが展開されている。さらに、国家衛生事業の重点分野としても伝染病のコントロールと根絶の重要な手段として位置づけられている。

EPIに関しては、ワクチン接種率を高め、ワクチンの接種行為を模範的にし、EPI対象疾患のサーベイランスを強め、対象疾患の発病率を減少させ、子供が健康的に成長することを確保し、子供の享受すべき権利を具現するために、衛生部は、相次いで、「計画免疫技術管理規程」「特殊人群計画免疫工作管理方案」「全国常規免疫接種率監測方案」「全国予防接種安全注射計画」などの一連の計画と方案の策定と改訂を行っている。



## 4 . 協力分野の現状と問題点

### (1) ワクチン接種率向上について

公式報告では、1歳未満のBCG、経口ポリオワクチン（OPV）、三種混合、麻疹ワクチンの4種の接種率は山西省95.4～97.3%、陝西省97.2～98.1%、1998年12月と1999年1月に行われたポリオ強化免疫の接種率は山西省98.1%、陝西省99.2%であり、まったく問題はみられない。しかし、実際県、郷鎮、村の接種点を訪問してみると、どちらの省でも接種記録の原簿が保存されていない、ドーズ別の報告がされていないなどの問題が広く見いだされた。末端での接種率記録のあいまいさは、それを集計したにすぎない省、地区レベルの接種率の数値にも大きな疑問符がつくことを意味する。未登録児の問題では西安市では「民工」と呼ばれる他省からの出稼ぎ労働者の子供が多く重要であり、ほかに商人や生活苦から都市へ流入してくる人口が未登録となっている。これらの人口が集まりやすい自由市場の近くの医療機関などでの接種を進めている。その他、B型肝炎、日本脳炎、髄膜炎球菌の3種の有料ワクチン接種が、県レベル以上でかなり普及していること、陝西省の訪問地域では基本4ワクチンの接種も、EPI保険の導入により実質的に有料化している等の状況がみられた。

### (2) ワクチン接種における安全注射について

血液媒介性疾患の伝播の視点から、注射の安全性を調査した。使い捨て注射器とガラス注射器の地理的分布では、山西省では全体の66%で使い捨て、陝西省では都市部の80%、農村の30%で使い捨てが使用され、残りはガラスを使用していると報告された。安全注射の実施状況は、山西省ではガラス使用地域で注射手技内容を定期報告させており、1998年にはガラスを使っている8561接種点のうち78%は針だけ換えて同じ注射筒で回し打ち、4%は針も筒も換えない回し打ちを行ったとしている。陝西省防疫站は都市部では「100%安全」、農村部では針だけ換える回し打ちがほとんどと説明した。現地調査では：ほとんどの接種点で、ガラス注射筒の数がきわめて少ない一方多くの注射針と一緒に滅菌、保存されており、針だけ換えた回し打ちを示唆、高圧蒸気滅菌器は訪問したすべての接種点で見られたが滅菌時間が15分とされており、WHO勧告の20分に足りない、使用済みの使い捨て注射器（血液のついたもの）を新品と一緒にダンボールに保管しており、再使用を示唆、使用済みの使い捨て注射器の裏庭への投棄や、不特定の場所での焼却、使い捨て注射器のEPIスタッフの収入源としての役割（一本あたり住民から0.4～0.5元、日本円で6～7.5円を徴収）が明らかになった。

### (3) サーベイランスデータの接種実施への活用

両省ともデータ分析は主に省、地区で行われ、県レベルでは年齢分布等の基礎的分析が行わ

れているとのことであった。山西省ではデータ分析結果を協議する定期会議はなかった。陝西省では四半期に1度予防疫学会議という学会議が開かれ、ここで西安市付近の市、地区からの参加者に対し専門家の講演が行われるほか、麻痺患者（AFP）症例の専門家診断が行われる。

データの下位レベルへのフィードバックに関しては、陝西省では計画免疫簡報が年4回以上不定期に刊行されている。山西省でも簡報の発行はされているが、詳細は不明である。現在省レベルでは報告のためのソフトウェアでデータ集積し、北京の予防医学科学院にEメールで報告している。分析のためのソフトウェアはEPIINFOを基本的に用いている。全体として、サーベイランスデータを系統的に接種計画に活用するスキームは、省レベル以下では整備されていない。

#### (4) ワクチン貯蔵、運搬

1980年代中盤にUNICEFから供与されたコールドチェーン機器の老朽化は、訪問調査で確かに確認することができた。世銀第7プロジェクトの実施は、現在までのところ目に見えて進展している地域は、訪問したなかではなかった。温度管理は形骸化し、記録表には同じ温度の行列が、外気温の激しく違う1999年1月から6月まで連続していることがしばしばだった。山西省防疫站EPI課はワクチン効力テストを年1度行っている。1998年にはポリオ計63バイアル、麻疹計64バイアルが異なるレベルから抽出されテストされている。結果、省から地区ならびに郷鎮から村で合格ワクチン率が激減していることがわかる。省から地区への輸送時の温度管理、接種時の村でのワクチン温度管理に問題があることが疑われる。陝西省は調査を行っていない。

表 山西省におけるワクチン効力テストの結果：合格ワクチンの割合（1998年）

	省	地区	県	郷鎮	村
d ポリオワクチン	100%	50%	47%	60%	11%
麻疹ワクチン	100%	86%	79%	92%	59%

#### (5) ポリオ実験室能力およびAFPサーベイランス

両省ともポリオ実験室の技能、機材の整備状況は良好であった。陝西省で2種の培養細胞のうちポリオ感受性の低いものだけで陽性が出た場合に、ポリオでないと即座に除外していた点は、本来型分類を行わねばならない。また、糞便検査の結果の記録が、実験室とサーベイランス部門で異なっており、両者の連絡に問題があると思われた。AFPサーベイランスは、省の公式な指標では両省とも国家基準を満たしており、問題はない一方、末端レベルでの実施状況は、本調査では時間がなく詳細な情報収集ができなかった。

## ５．日本の他の協力との関連

本プロジェクトは、現在実施中のポリオ対策プロジェクトの後継プロジェクトと位置づけられている。

中国において保健医療分野の案件として、安徽省におけるプライマリー・ヘルス・ケア技術訓練センタープロジェクト（1999年8月より開始予定）、中日医学教育センター臨床医学教育プロジェクトを実施中である。特に、プライマリー・ヘルス・ケア技術訓練センタープロジェクトについては、プライマリー・ヘルス・ケア従事者のレベルアップを最終目標としている。末端レベルでは、村衛生室の医士が予防接種も治療も兼ねているため、将来的には、双方で開発した研修や教材の交換、活用などの可能性も考えられる。

## 6 . 第三国による協力の現状

UNICEFおよびWHOは、中国の予防接種計画全般に深くかかわっており、予防接種にかかる人材の育成、コールド・チェーン等の機材供与を行っている。

WHOを表敬し、意見交換を行ったところ、次のような結果となった。

### (1) 予防接種事業（EPI）におけるポリオ根絶の位置づけ

WHO側より「ポリオ根絶を第一優先と考えている。麻疹根絶とポリオ根絶を同時に実施することは得策でない。実験室への支援は継続してもらいたい。」とコメントがあった。

### (2) 麻疹コントロールについて

団より、「麻疹コントロールプロジェクト、特に実験室での麻疹の実験室診断の広がりがポリオ根絶事業を圧迫しているのではないかと、また麻疹のIgM抗体検査は、ワクチン株と野生株の区別ができないので、麻疹の確定診断になり得ないのではないかとコメントがあった。それに対し、WHO側は、「上海、北京ではポリオ根絶の体制が確立しているので、麻疹の各症例の実験室診断機能を確立するのが適当であるが、他の地域は流行が起きた時に、その確定のため、抗体検査を行う。麻疹の実験室診断機能の設立がポリオ実験室からの機材や人材の流用を意味する場合は、設立を遅らせる。IgMとIgG測定感受性、特異性は汎米保健機構（PAHO）が比較的高いと報告している。」と返答した。

### (3) 安全注射について

使い捨て注射器の位置づけについては、「地域政策として、自国で使い捨て注射器の買い付けを継続的に行う財政力をもつ国に限り、導入すべきということになっている。この条件を満たさない国に援助機関が使い捨てを供与するのは、持続性の意味から好ましくない。中国では1999年5月のEPI評価で、全国で訪問した32ほどの接種点のうち、ガラス注射器を使用しているところは4箇所しかなく、使い捨てへの移行の早さに驚いた。使用済み注射器の廃棄用焼却炉の使用実験は、中国ではまだ行われていない。」とコメントがあった。さらに、「WHOとしては蒸気滅菌が十分にできたかをしめすマーカーの使用に興味をもっている。今年中にUNICEFと共同で注射手技調査を実施する。安全注射のためにはシステムの設立が最も大切。」と述べ、次期JICAプロジェクトが安全注射を中心的に取り上げることに賛同した。Ausaidによる新生児破傷風制圧と安全注射のための資金協力（対象：寧夏、内モンゴル、甘肅、青海）の情報が提供された。

#### (4) サーベイランスの強化とデータ活用

現状と日本の協力の可能性に関連し、「現在比較的高い質を保っている麻痺患者（AFP）サーベイランスに新生児破傷風と麻疹を組み込んでいくのが、サーベイランスの基本戦略。1999年5月のEPI評価では、省以下のレベルでのデータ活用が乏しく、データ分析用のコンピューターソフトウェアの作成、配布、訓練を勧告した。現在、まだソフトウェア開発は始まっていない。中国予防医学科学院がこれに高い優先順位を置いており、WHOもジュネーブ本部の専門家を通じて支援したい。JICAが日本からの専門性を生かしてこの分野に協力することは、歓迎する。」とコメントがあった。

また、アメリカのCDC（Center for Disease Control and Prevention）は、WHOの事務所に職員を出向させ、予防接種計画実施に関する国家レベルでの政策助言を衛生部に対し行っている。

中国の省レベルへ中国人専門家による調査・監視チームが編成される際にも、WHO、CDCから1～2名の専門家が派遣されているが、このような調査・監視チームにはJICA専門家の参加も要請され、対応している。

## 7. プロジェクト実施計画の概要および協議経緯

### (1) プロジェクト名称

日文：予防接種事業（EPI）強化および安全注射モデル開発プロジェクト

中国側の要請書では、「貧困地域における免疫接種強化および対象疾病コントロール強化プロジェクト、（中文：加強貧困地区免疫接種与針對疾病控制）」という名称案が出されていた。

しかし、広大な中国の貧困地域のEPI強化をプロジェクト協力期間中（5年間）に日本の協力のみで実施するのは困難である、「貧困地域」を名称に付すがために、プロジェクト実施中および終了後にわたり機材供与を中心とした協力になりかねないとの懸念がある、という理由から、日本側の案どおり、「貧困地域」をはずす名称とした。

### (2) プロジェクト上位目標

EPI対象疾病の発病率を減少させる。

### (3) プロジェクトの目的

EPI事業強化のモデル開発を行う。

### (4) 協力内容

#### 1) EPI事業強化のモデル開発

ワクチン接種率向上

ワクチン接種における安全注射

サーベイランスの質的向上およびサーベイランスデータの接種実施への活用

ワクチン貯蔵、運搬

#### 2) ポリオ根絶活動

ポリオ実験室能力の維持およびハイリスク地域における麻痺患者（AFP）サーベイランスの強化

事前調査後に派遣される短期調査員が協力内容について調査し、実施協議までに双方が協力内容の詳細について協議し明確化する。

### (5) プロジェクト対象地域

要請地域のなかの2省をモデル省とする。中国政府が合同委員会で確認された本プロジェク

トの成果を他の地域に普及する場合、日本側はこれについて日中双方の合意に基づき可能な範囲内で協力に努める。

(4)と(5)に関し、当該プロジェクトには注射の安全性確保や、予防接種率のさらなる強化など、方法論が必ずしも確立していない領域も含まれる可能性があるため、対象は実施モデルの作成が可能な範囲に限定することが必要であり、日本側から2省を提案した。中国側は、要請のある6省・自治区全地域を協力対象とすることを希望し、日本側の提案に難色を示した。

中国国内の地域格差が大きいことから1省の経験が他省に普及できるものではないこと、またモデルづくりの重要性は認めるものの2年かければ十分であり、残りの3年で他の省への普及を図る内容のプロジェクトが提案された。ただ、安全注射の問題のみでも解決すべき問題を抱えており、多岐にわたるEPIのモデルづくりに5年は要するという日本側の説明に対し、中国側は一定の理解を示し、2省を対象にモデル形成を図ることで納得したが、残り4省についても協力することを文章に盛り込むことを主張した。

結果、将来の普及については、日本側は日中双方の合意を得て、可能な範囲で協力に努めるという文言で合意した。

#### (6) 協力期間

5年間（2000年6月頃～2005年）

#### (7) 日本側のとるべき措置

##### 1) 専門家派遣

(4)で記載した内容に関連する長期・短期専門家を双方が合意した計画に基づき派遣する。北京にプロジェクト事務所を設置することとする。長期専門家はこの事務所および対象地域に対し技術指導を行う。

##### 2) 研修員受入れ

(4)に記載した内容に関連する中国側要員を研修員として日本の適当な関連施設に毎年若干名受け入れる。

##### 3) 機材供与

プロジェクトの活動に必要な必要最低限の機材を双方で合意される計画に基づき予算内で供与する。

##### 4) 人材養成

(4)に記載した内容に関し、日本側は、中国国内の中国人スタッフの養成に対し支援する。

## ８．プロジェクトサイトについて

具体的な対象省名については、中国側から要請された４省２自治区を、今回すべて訪問調査し検討したわけではないが、北京からの近接性、人口密度、生活のしやすさや社会資源の多寡などを検討し、山西、陝西両省が適切と判断し、議事録の文面には明記していないものの、中国側ともほぼ一致した見解をもつにいたっている。これら対象候補省については、今回の事前調査で訪問し、以下の項目を調査することができた。

### (1) 北京との通信、交通

山西省の省都、太原まで、北京から車で（高速道路）５時間を要する。飛行機は午後遅くの便に限られ、約４０分の飛行時間である。陝西省の省都、西安まで、北京から毎日５～６便の飛行機があり、約２時間の飛行時間である。運賃は往復８４０元である。西安には成田から週３便、関西空港から週２便直行便もある。西安－太原間のアクセスはあまりよくなく、列車で１３～１４時間、車で７～８時間を要する。飛行機便も週に２便のみある。北京との通信については、どちらの省都も電話、携帯電話、ファクス等問題ない。インターネットアクセスについては未確認だが、山西省では衛生庁疾病控制処、陝西省では省防疫站の職員の名刺にＥメールアドレスがみられ、省都におけるアクセスは確立していると推察される。

### (2) 長期滞在のアメニティ

太原は人口１５０万人、西安は３００万人を擁する。後者は特にサービス業の充実が著しく、全日空ホテル等もあり、長期滞在には好ましい環境であるが、交通渋滞など都市ならではの問題もある。将来的にサテライトオフィスを構えたとすれば、最大限一箇所に留めるべきであろうが、その際、総合的にみて、西安が太原よりも長期専門家のアメニティを考えると、好ましいと考えられた。

### (3) 安全性

安全上の大きな問題は見受けられなかったが、交通ルールが守られていないため、移動時の交通事故については、プロジェクト実施中そのリスクを最小限にしていけるように気を配る必要がある。

### (4) 政治的、社会的安定度

西安では６月にキリスト教徒５００人によるデモが日本の新聞で報じられた。また７月にはやはり自営業者５００人による汚職に抗議するデモが日本の中国専門紙で報道されている。現地



では大きな騒乱などの形跡はなく、局地的、散発的な問題と考えられ、プロジェクト対象地域としての適格性を問うほどの大きな問題ではないと認識される。

#### (5) フィールドへのアクセス

両省とも地理障壁としては山地が主であり、その割合は山西省で省面積の50%、陝西省で36%を占める。平野部はそれぞれ20%、19%にすぎず、それ以外は丘陵地ないし黄土高原である。山西省は比較的山地の割合が多いが、道路整備は進んでいる。東西方向では、北京からの高速道路で東側へのアクセスがよいが、西へのアクセスはあまりよくない。南北方向では、北端の大同市まで舗装道路を車で4時間（将来高速化の予定あり）、南端まで同様に5時間で行くことができ、アクセスは比較的よい。陝西省は北部に黄土高原と砂漠、南部に山地を抱え、中部の平原地帯の中心に西安市がある。東西方向では平野部を横断する形で車道があり、アクセスは比較的よい。南北方向では、地理的障壁と道路の未整備が重なり、アクセスはかなり悪く、北部の主要都市延安市まで8時間、北端の榆林市へは丸二日、南部の主要都市安康まで車で丸一日かかる。安康へは西暦2000年末に高速が開通すると5時間でアクセスできるようになるとの情報がある。

#### (6) カウンターパート

外国語を話せるキーパーソンとしては、山西省では衛生庁外事処に日本語が流暢に話せるスタッフが1人、同疾病控制処に英語が流暢に話せるスタッフが1人いる。防疫站には外国語の流暢な人材はいない。埼玉県との交流事業で臨床医師数名と公衆衛生スタッフ1名が毎年埼玉を訪れており、日本への親近感は強い。陝西省では防疫站長が流暢な英語を話し、EPI課のスタッフの1人が若干の英語を話す。

#### (7) プロジェクトで使用する車の有無

山西省なし。陝西省にはJICAが1989年に供与したランドクルーザー1台があるが、新規プロジェクトの専用車にするのは非現実的。両省とも1999年度からプロジェクト実施用の車それぞれ1台の供与が必要と考える。

## ９．実施協議調査までの検討事項

### (1) ポリオ根絶に対する支援について

本プロジェクトでポリオ対策については、基本的には目標を達成し成果をあげたと考え、予防接種事業（EPI）対象疾病のうちの１つの扱いとする。しかし、ポリオ対策プロジェクトで蓄積された方法論は、最大限に活用するという方針で望んだ。

また、本プロジェクトでポリオ根絶をプロジェクト上位目標に入れることについては、ポリオ対策プロジェクトの評価を経なければ、次期のプロジェクトでどう協力するのかについては議論できない、上位目標を２つ打ち立てることによって、プロジェクト管理が困難であると懸念される、プロジェクト対象地域が異なる、などが、調査団内で議論された。

一方、中国側は、ポリオ根絶は引き続き重要な課題であるとの認識であり、ポリオ根絶を上位目標に入れることについては積極的な姿勢であった。

「本プロジェクトにおいても、ポリオ対策プロジェクトに引き続き日本側の協力が必要である。前半（発病率の低下）で日本が参加したにもかかわらず、後半WHOの根絶承認を受ける段階で日本の参加がないのは大変残念である。」「日本の国益やJICAのプレゼンスにかかわるのではないか。」

「（ポリオを入れることは）現行のプロジェクトでポリオをやり残したということではない。」等のコメントが、衛生部疾病控制司よりあった。

日本側および中国側の意見統一がはかられず、プロジェクト上位目標に「ポリオ根絶も達成する。」という文言を入れることについて、日本側の持ち帰り検討事項となった。

今後、ポリオ対策への協力について、R / Dに盛り込むのか否かを含め検討する必要がある。

### (2) 無償資金協力との連携について

中国側の無償資金協力による機材供与への期待は大きいと思われるが、中国側が自力で他省に普及できるモデルの開発をめざし、プロジェクトへの機材供与は最小限にとどめる必要がある。今回、中国側から無償資金協力の要望はなかったが、JICA中国事務所から無償資金協力について帰国後検討してほしい旨の要望があった。

日本側としては、プロジェクトでどのレベルまでコールドチェーンを整備し、どのスキーム（無償資金協力、プロジェクト方式技術協力、医療特別機材等）で協力するのか検討することもある必要である。

### (3) プロジェクトオフィスの所在地について

プロジェクトオフィスの所在地につき、一本化が望ましいかあるいは北京と対象省の二本立

てが望ましいか、また、必要に応じて、モデル地区立ち上げの半年あるいは1年間は対象省に一本化し、その後北京オフィスを立て上げるのかなどについて、おのこの得失と現実性を検討する必要がある。

北京でのオフィス候補として、現行ポリオ対策プロジェクトで使用している予防医科学院の1室があり、次期プロジェクトにおいても確保されとのこと。しかし、プロジェクトの内容、経費などを考慮し、北京にもオフィスを置くか、地方と北京の2カ所に置くのか等決める必要がある。



## 附 属 資 料

ミニッツ（和文、中文）

中国各地区国内生産値 国民経済統計資料抜粋

1996年衛生事業費に関する資料 衛生統計工作抜粋

陝西省予防接種・コールドチェーン情報報告（中文）

山西省予防接種・コールドチェーン情報報告（中文、英文）

National Programme for Safe Injection in Preventive Vaccination  
for the Years 1997 ~ 2000（WHOより入手）

Plan of Action to Eliminate Incorrect EPI Sterilisation and Injection Practices  
in China by the Year 2000（WHOより入手）

Review of the Expanded Programme on Immunization and Poliomyelitis  
Eradication Activities in China



① ミニッツ（和文、中文）

中華人民共和国 予防接種事業（EPI）強化および  
安全注射モデル開発プロジェクト  
事前調査団と中国側関係者との討議議事録

中華人民共和国予防接種事業（EPI）強化および安全注射モデル開発プロジェクト（以下「プロジェクト」という）にかかる中華人民共和国政府からの技術協力要請に基づき、日本政府は事前調査の実施を決定し、国際協力事業団は、国立国際医療センター研究所吉倉廣所長を団長とする事前調査団（以下「調査団」という。）を、1999年6月20日から同年6月30日までの日程で中華人民共和国に派遣した。

同調査団は、中華人民共和国関係機関の協力を得て要請の背景について調査を行うとともに、中国側関係者と、協力の枠組みおよび内容について一連の協議を行った。

本議事録は協議の結果をとりまとめたものであり、双方署名のうえ確認するものである。

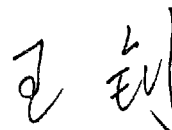
双方はプロジェクトの枠組みおよび両国政府のとりべき措置について、別紙のとおり各々の政府に提案することに合意した。

1999年6月29日

於：北京



吉倉 廣  
事前調査団長  
国立国際医療センター研究所長  
日本国



王 金  
衛生部疾病控制司長  
中華人民共和国

## 附属書

1. プロジェクト名称  
    日文：予防接種事業（EPI）強化および安全注射モデル開発プロジェクト
2. プロジェクト上位目標  
    EPI 対象疾病の発病率を減少させる。
3. プロジェクトの目的  
    EPI 事業強化のモデル開発を行なう。
4. 協力内容
  - (1) EPI 事業強化のモデル開発
    - ア. ワクチン接種率向上
    - イ. ワクチン接種における安全注射
    - ウ. サーベイランスの質的向上およびサーベイランスデータの接種実施への活用
    - エ. ワクチン貯蔵、運搬
  - (2) ポリオ根絶活動  
    ポリオ実験室能力の維持およびハイリスク地域における AFP サーベイランスの強化

事前調査後に派遣される短期調査員が協力内容について調査し、実施協議までに双方が協力内容の詳細について協議し明確化する。
5. プロジェクト対象地域  
    要請地域の中の 2 省をモデル省とする。中国政府が合同委員会で確認された本プロジェクトの成果を他の地域に普及する場合、日本側はこれについて日中双方の合意に基づき可能な範囲内で協力に努める。
6. 協力期間  
    5 年間（2000 年 6 月頃～2005 年）
7. 日本側のとるべき措置
  - (1) 専門家派遣
    - ア. 4. で記載した内容に関連する長期・短期専門家を双方が合意した

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計画に基づき派遣する。

- イ. 北京にプロジェクト事務所を設置することとする。長期専門家はこの事務所および対象地域に対し技術指導を行う。

(2)研修員受入

- 4.に記載した内容に関連する中国側要員を研修員として日本の適当な関連施設に毎年若干名受け入れる。

(3)機材供与

- プロジェクトの活動に必要な必要最低限の機材を双方で合意される計画に基づき予算内で供与する。

(4)人材養成

- 4.に記載した内容に関し、日本側は、中国国内の中国人スタッフの養成に対し支援する。

8. 中国側がとるべき措置

(1)カウンターパート及び事務職員の配置および役務の提供

- ア. 日本人専門家の技術指導が容易に行われるよう、適切な中国側カウンターパートを配置すること。
- イ. 中国側は自己負担によって、通訳、事務職員、運転手等プロジェクトの実施に必要な役務提供をすること。

(2)下記各項の経費の負担

- ア. 日本側より供与される機材の中国国内における保管、輸送、据えつけ、操作および維持管理に必要な経費。
- イ. プロジェクト実施に必要な消耗品およびすべての運営経費。

(3)日本側から供与される機材に対し、中華人民共和国において課せられる関税、国内税およびその他財政課徴金を負担すること。

9. プロジェクトの実施体制

本プロジェクトの効果的実施をはかるため、以下の役割をもった合同委員会を設置する。

(1) 役割

- ア. 実施協議時に定める暫定実施計画に基づき年次計画を策定する。
- イ. 技術協力全体の進捗及び年次計画の実施状況につき評価を行う。
- ウ. 技術協力計画上に生じたまたは技術協力計画に関連した重要な事項につき協議検討する。

(2) 構成

- ア. 委員長：中華人民共和国衛生部国際合作司副司長

吉金

乙

イ. 中国側

中国科学技術部国際合作司日本処処長  
中国衛生部疾病控制司副司長  
プロジェクト対象省衛生庁主管庁長  
中国予防医学科学院院長  
その他プロジェクトの関係者

ウ. 日本側

プロジェクトリーダー  
業務調整員  
日本人専門家  
本部より派遣される関係調査団  
JICA 中国事務所長

(注) 在中国日本大使館員は合同委員会にオブザーバーとして出席することができる。

(3) プロジェクトの管理

- ア. 中国衛生部国際合作司はプロジェクトの調整・管理にかかるすべての責任を負う。
- イ. 中国衛生部疾病控制司は、プロジェクトの実施にかかるすべての責任を負う。
- ウ. 中国衛生部は地方政府と協力してプロジェクトの成果を全国に展開させる。

10. 実施協議までのタイムスケジュール

- (1) プロジェクトのより詳細な内容を調査し、中華人民共和国側と協議するため、実施協議調査までに JICA は短期調査を実施する。
- (2) 中国側と日本側双方がプロジェクトの詳細な計画を策定することを目的に、日本側は短期調査時に PCM の専門家を派遣し、中国側関係者をまじえて PCM ワークショップを実施する。
- (3) 短期調査の結果を踏まえ、プロジェクトの詳細について協議し、その結果を協議議事録としてとりまとめ署名交換するため、プロジェクト実施協議調査団を派遣する。

11. 持ち帰り検討事項

中国側は、グローバルなポリオ根絶承認の必要性和中国周辺国家のポリオ疫学の現状に鑑み、日中双方がポリオ対策プロジェクトの成果を揺るぎないものとするため、プロジェクト上位目標に「ポリオ根絶を達成する。」という文言

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を入れることについて、中国側から強く希望した。

以上

吉倉

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**中华人民共和国有关部门与日本国事前调查团  
关于“中华人民共和国加强计划免疫及建立安全注射典  
范项目”的会谈纪要**

根据中华人民共和国政府关于中华人民共和国加强计划免疫及建立安全注射典范项目（以下称项目）的技术合作要求，日本国政府决定实施事前调查，国际协力事业团于1999年6月20日至6月30日向中华人民共和国派遣了以国立国际医疗中心研究所所长吉仓广先生为团长的事前调查团。

调查团得到了中华人民共和国有关部门的合作，对申请背景进行了调查，并与中方有关人员就合作项目的框架以及内容进行了一系列的协商。

本会谈纪要汇总了协商的结果，双方特签字予以确认。

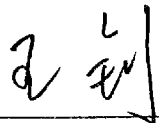
中日双方就项目的框架以及两国政府应采取的措施，同意按附件所列的内容分别向本国政府提出建议。


一九九九年六月二十九日

于北京

中华人民共和国  
卫生部  
疾病控制司  
司 长  
王 钊

日本国  
事前调查团团长  
国立国际医疗中心  
研究所所长  
吉仓 广

  
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## 附件

### 1. 项目名称:

加强计划免疫及建立安全注射典范项目

### 2. 项目上位目标

减少 EPI 针对疾病的发病率。

### 3. 项目目的

建立加强 EPI 事业的典范。

### 4. 合作内容:

(1) 开发加强 EPI 事业的典范。

a. 提高免疫接种率

b. 在免疫接种工作中, 实施安全注射

c. 提高监测工作质量并将监测资料灵活运用到接种实施上

d. 疫苗贮存和运输

(2) 消灭脊髓灰质炎活动

维持脊髓灰质炎实验室诊断能力, 并强化高危地区 AFP 监测工作。

事前调查结束后, 将派遣短期调查员就合作内容进行调查。

中日双方在签订实施协议之前, 通过协商, 明确合作内容细节。

### 5. 项目对象地点:

以中方申请地区中的 2 个省做为项目试点合作省份。如中国政府准备向其它地区扩展联合委员会所确认的项目成果时, 日方在双方同意的基础上, 在可能的范围内, 对此尽力予以协助。

### 6. 项目合作期间:

5 年 (自 2000 年 6 月前后至 2005 年)。

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长谷

## 7. 日方应采取的措施

### (1) 派遣专家

- a. 根据双方同意的计划, 派遣与上述第 4 项相关的长期、短期专家。
- b. 将于北京设置项目办公室, 由长期专家对项目办公室及项目实施地区工作进行技术指导。

### (2) 接收研修生

每年接收与上述第 4 项相关的中方人员做为研修生赴日, 在日本国内适当的有关单位进行研修。

### (3) 提供器材

根据双方同意的计划, 在预算范围内, 提供项目活动所需的最低限度的必备器材。

### (4) 培训人才

日方就第 4 项的内容在中国国内对中方人才培养予以支持。

## 8. 中方应采取的措施:

### (1) 配备对口人员及工作人员, 并提供必须的后勤服务。

- a. 为便于日本专家技术指导工作, 配备适当的中方对口人员。
- b. 中方依据自己负担的经费, 提供项目实施所需的翻译、办公人员、司机等工作人员。

### (2) 负担下列各项经费

- a. 日方所提供的器材在中国国内保管、运输、安装、操作和维护管理所需的经费。
- b. 项目实施所需的消耗品及全部运营经费。

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去念

- (3) 承担日方提供器材在中华人民共和国所需缴付的关税、国内税及其有关费用。

#### 9. 项目实施体制:

为有效地实施项目, 组织联合委员会, 使其承担下述职能。

##### (1) 职能

- a. 根据通过实施协商所拟定的暂时实施计划来制订年度计划。
- b. 对技术合作整体的进展情况以及年度计划实施情况进行评估。
- c. 就技术合作计划所产生的或与技术合作计划有关的重要事项, 进行协商和研究。

##### (2) 构成

- a. 委员长: 中华人民共和国卫生部国际合作司副司长。

- b. 中方:

中国科学技术部国际合作司日本处处长

中华人民共和国卫生部疾病控制司司长

中国项目省省卫生厅主管厅长

中国预防医学科学院院长

其它项目有关人员

- c. 日方

项目首席顾问

业务协调员

日方专家

由 JICA 总部派遣的各有关调查团

JICA 中华人民共和国事务所所长

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(备注)日本国驻华使馆官员可以做为观察员参加联合委员会。

(3) 项目管理

- a. 中国卫生部国际合作司全面负责项目的协调管理工作。
- b. 中国卫生部疾病控制司全面负责项目实施工作。
- c. 中国卫生部协助地方政府, 向全国推广项目成果。

10. 在实施协商之前的程序

- (1) 为对项目内容更详细地进行调查, 并与中华人民共和国方面进行协商, JICA 在实施协商调查之前, 进行短期调查。
- (2) 以中日双方制订项目详细计划为目的。日方在进行短期调查时, 同时派遣 PCM (Project Cycle Management) 专家, 与中方有关人员进行 PCM 研究会。
- (3) 派遣项目实施协商调查团, 以便根据短期调查结果, 就项目详细内容进行协商, 并将其结果汇总为会谈纪要, 签署交换。

11. 待定事项

中方提请日方注意全球消灭脊髓灰质炎证实的要求及中国周边国家脊髓灰质炎流行形势, 为巩固中日双方脊髓灰质炎 控制项目成果, 中方强烈要求将完成消灭脊灰列入项目上位目标。



② 中国各地区国内生产总值 国民经济统计资料摘要

— 862 —

国民经济统计资料

各地区国内生产总值(1997年)(二)

单位:亿元

地 区	构 成 %			指 数 1996 = 100				人均国内 生产总值 (元)
	第一产业	第二产业	第三产业	国内生产 总 值	第一产业	第二产业	第三产业	
北 京	4.7	40.8	54.5	109.6	101.0	108.1	111.8	16735
天 津	6.0	51.9	42.1	112.1	107.7	111.7	113.4	13796
河 北	19.3	48.9	31.8	112.5	105.4	114.9	112.5	6079
山 西	13.0	53.3	33.7	110.5	95.0	114.6	110.2	4736
内 蒙 古	29.5	40.7	29.8	109.7	102.0	114.5	110.8	4691
辽 宁	13.9	50.0	36.1	108.9	101.3	110.5	109.2	8525
吉 林	25.4	39.8	34.8	109.2	99.6	109.1	117.3	5504
黑 龙 江	17.9	53.5	28.6	110.0	106.5	110.1	112.7	7243
上 海	2.3	52.2	45.5	112.7	104.2	110.6	117.7	25750
江 苏	15.1	51.1	33.8	112.0	105.0	112.6	114.1	9344
浙 江	13.7	54.1	32.2	111.1	104.5	112.8	110.5	10515
安 徽	27.4	47.2	25.4	112.7	109.2	114.7	111.3	4390
福 建	19.2	43.1	37.7	114.5	108.0	116.4	115.4	9258
江 西	27.7	38.4	33.9	111.5	106.8	113.0	114.0	4155
山 东	18.0	47.9	34.1	111.2	100.5	113.0	114.4	7590
河 南	24.7	47.1	28.2	110.4	107.6	111.0	112.0	4430
湖 北	22.2	46.6	31.2	113.0	106.9	115.8	112.9	5899
湖 南	28.6	39.0	32.4	110.8	106.1	113.5	111.5	4643
广 东	13.5	49.9	36.6	110.6	104.8	112.6	109.1	10428
广 西	31.3	37.7	31.0	109.0	111.3	108.6	107.3	4356
海 南	36.9	20.2	42.9	106.4	106.8	105.4	106.5	5698
重 庆	22.6	41.7	35.7	111.0	103.4	112.4	114.5	4452
四 川	27.7	41.7	30.6	110.2	105.3	113.7	109.2	4029
贵 州	34.3	37.0	28.7	109.0	104.2	112.3	109.3	2215
云 南	23.8	45.6	30.6	109.4	104.7	110.8	111.3	4042
西 藏	37.9	22.0	40.1	111.5	104.0	112.7	116.7	3194
陕 西	20.5	41.9	37.6	110.0	100.3	114.2	110.2	3707
甘 肃	24.3	43.9	31.8	108.5	98.0	110.4	112.7	3137
青 海	20.1	39.0	40.9	109.0	103.5	110.4	110.2	4066
宁 夏	21.2	41.6	37.2	107.6	103.3	108.1	109.4	4025
新 疆	26.6	39.4	34.0	111.0	110.8	113.2	108.7	5904

注:本表绝对数按当年价格计算,指数按可比价格计算。

## 各地区国内生产总

地 区	国 内 生 产 总 值 (亿元)								
		第一产业	第二产业	工 业	建筑业	第三产业	农林牧渔 服务业	地质勘查业 水利管理业	交通运输仓储 和邮电通信业
北 京	1810.09	84.85	738.56	588.36	150.20	986.68	1.87	3.40	135.79
天 津	1240.40	74.55	643.88	580.21	63.67	521.97	0.31	3.92	113.63
河 北	3953.78	761.76	1934.38	1701.42	232.96	1257.64	5.78	16.09	276.61
山 西	1480.13	191.84	789.45	703.02	86.43	498.84	5.10	7.98	111.31
内 蒙 古	1094.52	322.52	445.50	374.34	71.16	326.50	3.41	3.96	98.05
辽 宁	3490.06	485.38	1743.87	1567.56	176.31	1260.81	8.91	13.47	224.03
吉 林	1446.91	368.16	575.43	495.10	80.33	503.32	2.82	3.54	110.30
黑 龙 江	2708.46	484.81	1449.25	1304.86	144.39	774.40	7.32	9.03	143.16
上 海	3360.21	75.80	1754.39	1580.15	174.24	1530.02	3.68	6.27	227.88
江 苏	6680.34	1008.41	3411.86	3016.44	395.42	2260.07	27.39	17.44	369.54
浙 江	4638.24	637.48	2509.56	2254.90	254.66	1491.20	6.18	5.94	288.93
安 徽	2669.95	732.37	1260.90	1149.04	111.86	676.68	3.40	7.26	126.66
福 建	3000.36	576.63	1293.50	1092.15	201.35	1130.23	5.12	4.92	298.72
江 西	1715.18	475.18	658.25	548.39	109.86	581.75	5.64	5.79	115.41
山 东	6650.02	1195.00	3185.05	2830.05	355.00	2269.97	9.66	10.59	424.36
河 南	4079.26	1008.55	1920.05	1681.25	238.80	1150.66	3.75	20.17	268.26
湖 北	3450.24	767.92	1606.98	1453.31	153.67	1075.34	4.23	7.16	167.68
湖 南	2993.00	855.75	1166.97	1019.12	147.85	970.28	6.00	9.41	195.38
广 东	7315.51	986.82	3647.82	3158.74	489.08	2680.87	14.93	23.52	629.34
广 西	2015.20	631.62	759.54	669.96	89.58	624.04	3.60	3.68	120.06
海 南	409.86	151.28	82.68	49.30	33.38	175.90	0.74	2.07	31.70
重 庆	1350.10	304.51	563.40	477.13	86.27	482.19	4.03	1.71	72.43
四 川	3320.11	919.28	1385.38	1175.27	210.11	1015.45	10.23	8.47	135.78
贵 州	792.98	271.83	293.47	250.60	42.87	227.68	1.79	1.85	20.72
云 南	1644.23	391.48	750.01	651.72	98.29	502.74	5.66	5.67	76.02
西 藏	76.98	29.18	16.95	8.13	8.82	30.85	1.28	1.08	4.09
陕 西	1326.04	271.52	555.86	456.94	98.92	498.66	5.44	8.98	106.78
甘 肃	781.34	189.79	343.40	287.10	56.30	248.15	3.55	6.98	34.87
青 海	202.05	40.65	78.80	57.69	21.11	82.60	1.15	2.53	12.14
宁 夏	210.92	44.82	87.65	73.18	14.47	78.45	1.01	1.68	14.33
新 疆	1050.14	279.73	413.29	303.49	109.80	357.12	5.80	8.42	75.67

注：本表绝对数按当年价格计算，指数按可比价格计算。

表3 1996年人均卫生事业费分地区一览表

汇总单位：卫生部

1996年12月

单位：元/人

编号	地区名称	人口 (万人)	人均卫生 事业费	其中：					
				医院 经费	卫生院 补贴	防治防疫 事业费	妇幼保健 经费	药品检验 机构经费	中等专业 学校经费
1	卫生部	119546.27	15.69	6.43	3.14	2.14	0.63	0.23	0.62
2	北京	1083.23	41.07	21.82	3.73	3.73	0.96	0.50	2.64
3	天津	902.43	34.30	15.91	5.15	3.24	0.92	0.46	1.07
4	河北	6461.03	10.24	3.84	1.91	1.46	0.56	0.12	0.42
5	山西	3059.21	15.36	6.59	3.03	1.99	0.91	0.22	0.60
6	内蒙	2263.00	18.65	7.11	3.40	3.79	1.22	0.29	0.81
7	辽宁	4056.78	17.39	8.06	1.60	3.16	0.73	0.33	0.79
8	吉林	2579.14	19.96	7.86	3.35	3.21	1.10	0.39	0.85
9	黑龙江	3605.10	16.63	8.08	2.65	2.22	0.74	0.29	0.48
10	上海	1304.43	66.17	31.41	9.03	8.51	0.74	0.95	3.16
11	江苏	6908.13	16.02	5.50	4.12	1.88	0.41	0.19	0.58
12	浙江	4400.09	16.70	5.04	4.37	2.23	0.58	0.31	0.72
13	安徽	6053.98	8.79	3.22	2.20	1.41	0.36	0.10	0.31
14	福建	3210.61	18.07	6.58	5.06	2.24	0.69	0.24	0.73
15	江西	3981.03	11.63	3.93	2.69	1.83	0.49	0.16	0.56

表

汇总单位：卫生部

单位：元/人

编号	地区名称	人口 (万人)	人均卫生 事业费	其中：					
				医院 经费	卫生院 贴补	防治防疫 事业费	妇幼保健 经费	药品检验 机构经费	中等专业 学校经费
16	山东	8747.05	14.69	6.39	3.30	1.77	0.52	0.21	0.54
17	河南	9203.06	7.45	2.87	1.16	1.12	0.28	0.12	0.36
18	湖北	5776.37	10.96	3.35	2.95	1.84	0.40	0.15	0.50
19	湖南	6403.85	9.19	2.32	1.91	1.71	0.43	0.15	0.38
20	广东	6896.77	27.43	12.55	5.35	3.28	0.99	0.30	0.67
21	广西	4545.50	9.69	3.34	2.30	1.42	0.64	0.14	0.58
22	海南	714.06	22.36	7.13	4.68	5.07	0.85	0.29	1.14
23	四川	11238.23	10.75	3.93	2.71	1.42	0.49	0.13	0.37
24	贵州	3459.55	10.18	3.82	2.56	1.44	0.45	0.16	0.47
25	云南	3909.39	21.80	8.50	5.14	3.33	1.30	0.36	0.82
26	西藏	239.30	90.28	59.58	7.02	10.46	3.32	0.47	2.78
27	陕西	3457.69	11.07	3.81	2.65	1.52	0.64	0.29	0.53
28	甘肃	2427.83	13.42	5.87	3.24	1.83	0.75	0.24	0.59
29	青海	462.65	31.87	14.24	5.30	5.66	1.76	0.57	1.74
30	宁夏	521.21	18.90	7.59	3.49	3.02	1.47	0.18	0.92
31	新疆	1675.57	29.75	14.25	6.82	4.01	1.14	0.26	1.24

(李 鑫)

## 陕西省计划免疫冷链情况汇报

### 一、基本情况

陕西省位于中国的中西部，东隔黄河与山西相望，西连甘肃、宁夏，北邻内蒙古，南连四川和重庆，东南与河南、湖北接壤，南北长 1300 公里，东西宽 600 公里，总面积 20.56 万平方公里。由陕北高原、关中平原和陕南秦巴山区组成，山区占 36%，黄土高原占 45%，平原占 19%。年平均气温 13℃，夏季气温可达 39℃，属干旱地区。

全省辖 7 个地级市、3 个地区和 1 个农业开发区，共有 106 个县（市、区）、2135 个乡镇、35511 个行政村（居委会），出生率 13.91‰。1998 年底全省总人口为 3596 万人，0-3 岁儿童 1589730 人，0-7 岁儿童为 3732514 人。

全省有 135 个卫生防疫站，有卫生防疫专业人员 5019 名，计划免疫接种点 35081 个，有乡村医生 36290 人，卫生员 20259 人。

97 年国民生产总值 1410 亿元，财政收入 155 亿元，城镇人均收入 4220 元，农村人均收入 1406 元。国家级贫困县有 50 个，占全省县区数的 46.7%，连年的旱灾，使各级政府经费十分紧张，县级不仅缺乏办公、差旅费，70% 的县的工资发不足，仅给少量的津贴 100 元左右。

### 二、全省冷链系统的建立

从 80 年代初，计划免疫及冷链建设工作就得到了各级政府领导的重视和支持，1980-1984 年 5 月，为省、地（市）防疫站建立普通冷库 10 座，为各县（区）防疫站配备普通冰箱 113 台，为乡（镇）、街道卫生院配备冰壶 14475 个，这批冷藏设备在保存疫苗、保持疫苗效价发挥了一定的作用。1984-1985 年，全省开展了冷链建设的筹资工作，成立了省冷链项目领导小组，下设冷链项目办公室，1986-1988 年，在联合国儿基会、卫生部的支持下，全省采取“分级负责，多方集资，统一订货，逐步完善”的原则，到 1988 年省、地、县三级共集资 728.49 万元，联合国儿基会投资 453.36 万元，装备冷藏车 3 辆，疫苗运输车 89 辆，低温冷库 3 座，普通冷库 14 座，冰排速冻器 780 台，普通冰箱 2251 台，疫苗运输箱 567 个，冷藏背包 27150 个，冰壶 6392 个，消毒器 8710 个，注射器 380000 具等。1986-1987 年在咸阳市秦都区开展了冷链装备及运转试点，随之在全省推广。1989 年冷链运转工作在全省各地、市全面展开，每年冷链运转 6-12 次，改变了冷链运转前每年 1-2 次突击性预防接种为常年有计划的免疫接种，增加了接种机会，保护了疫苗效价，提高了疫苗接种质量和接种率。1996-2000 年陕西省被列为世界银行贷款卫生 VII 项目的省份之一，使全省已配备十年以上的冷链设备得到一定的补充，截止 1998 年底，全省已接到卫七项目设备计低温冷库 2 座，普通冷库 9 座，低温冰柜 50 台，消毒锅 16000 个，注射器材 16000 套，计算机 11 台，打印机 11 台，复印机 11 台，投影仪、彩电和录像机各 118 台。

### 三、计划免疫工作进展

在逐步建立完善全省冷链系统设备的同时，加强全省计划免疫工作的规范化和法制化管理，1980 年颁布《陕西省预防接种工作实施办法》，在各级政府的领导下，建立组织管理系统，建立从省、县、乡村的计划免疫专业队伍，层层进行技术培训，政府拨出专项经费，卫生行政部门层层签订计划免疫责任书，实行目标管理，把常规免疫接种率、冷链运转、降低发病率、计划免疫监测、AFP 病例监测等列为地、市卫生局的一项主要任务，有要求、有检查考核，从而促进了计划免疫工作的全面发展，分别于 1988 年以省、1990 年以县、1995 年以乡为单位达到了儿童四苗接种率 85% 的目标。

1994 年 12 月，陕西省人民代表大会常务委员会通过并实施《陕西省儿童计划免疫条例》，使计划免疫工作纳入法制化管理。

全省各地冷链运转每年在 6 次，每次冷链运转有计划、有培训、有总结，对新生儿及时建卡、建证，加强对流动人口、计划外生育人口以及边远贫困儿童的计划免疫工作管理，要求各地、市制定《流动人口儿童免疫管理办法》，采取定期对流动人口进行摸底调查，增加接种点，加大宣传力度，张贴宣传画，宣传儿童计划免疫知识，在流动人口集中的地方，设立流动接种点等手段，保证了流动人口儿童的计划免疫工作，1999 年在全省 50 个国家级贫困县实施了新生儿乙肝疫苗免收成本费用的接种工作，将进一步提高我省乙肝疫苗接种率。据各地 98 年常规免疫报告，四苗接种率在 95% 以上。

加强冷链管理，改进免疫服务质量，充分发挥现有冷链设备的作用，各级加强冷链系统的常规监测管理工作，县级及以上单位的冷链设备均设立专人管理，每天早晚两次测温，层层制定冷链运转管理办法，定期督导检查。积极宣传和推行安全注射工作，目前全省各地城镇儿童疫苗接种已达到一人一针一管一用一消毒，还有部分农村地区儿童免疫接种仅达到一人一针接种。今后还需加强安全接种知识的培训，增强安全接种的意识，提高接种技术和工作责任心，不断提高接种质量。

省财政每年落实各种疫苗经费 515 万元，有力地保障了计划免疫和其它传染病预防接种工作的开展。

近年来，全省各级卫生行政和防疫部门在 4.25 预防接种宣传日、12.5 强化免疫日以及 WHO 成立纪念日期间，充分利用广播、电视、报纸、板报、公告、宣传画和标语等形式，开展了一系列覆盖面广、容量大、层次多、效果好的计划免疫知识宣传活动，仅 1998 年省卫生厅组织印制消灭脊灰强化免疫日活动资料 1 万份，计免宣传挂历 2 万张，常规免疫知识及免疫程序宣传画 2 万张，乙肝疫苗宣传画 3 万张。

1991 年建立 AFP 监测系统，92 年重点对各级专业人员进行专报系统要求内容的培训，使监测工作基本正常运转，94 年，省卫生厅以陕卫防字（1994）第 216 号文下发了“关于加强脊灰监测工作的通知”，对报告 AFP 病例实行报病奖励，同时对各地报送 AFP 病例标本实行报销旅差费等措施，进一步提高了 AFP 病例报告数量及质量，各项监测指标达到了卫生部要求的指标。我省从 92 年 5 月以后，连续 7 年未发现由脊灰野病毒

引起的麻痹病例，省脊灰实验室 93-98 年职能考核连续满分，95 年反向考核 6 份标本全部正确。97 年以 94 分的成绩通过 WHO 对消灭脊灰合格实验室的认定，6 年分离所得脊灰病毒送检国家脊灰中心实验室均为疫苗株或疫苗相关株，定型结果均与国家实验室定期相符合。计划免疫针对传染病得到了控制，98 年全省麻疹发病率为 5.89/10 万，百日咳发病率为 1.38/10 万，白喉连续四年没有发病。

全省成立了陕西省消灭脊灰证实工作准备小组、陕西省消灭脊灰 AFP 病例专家诊断小组，定期对全省 AFP 病例进行分析诊断，在保证不漏掉一例真正 AFP 病例的前提下，尽可能将非 AFP 病例筛除。

全省从 92 年起，除加强儿童常规免疫外，投入大量人力、物力和财力，按照卫生部的统一部署，在全省范围内，已连续开展了 6 次 12 轮的脊灰强化免疫活动，各级政府领导人亲自参加了这项活动，促进了计划免疫活动的深入开展。

#### 四、目前计划免疫面临的困难及问题

1. 87 年以前配备的冷链设备已使用 10 年以上，超期服役，损坏率较高。据统计，原配的疫苗运输车已基本报废，有的带病运转，速冻器损坏率为 30%，普通冰箱损坏率为 60%，冷藏箱损坏率为 40%，冷藏包损坏率 50%，省站两个低温冷库一个已损坏 4 年，另一个常年带病工作。疫苗运输车有 70% 已报废，疫苗运输车的不足，给冷链运转工作带来了困难，冷链运转只有乘坐班车，租用车，骑自行车或步行，费时、费力，不能有效保证疫苗质量。

2. 冷链运转 10 年以来，运转、维持费用每年每个县约需 2 万元左右，但由于各级财政困难，费用缺乏，这部分费用存在问题，个别边远山区，供电不正常，对于每周频繁的停电无能为力，需要各方给予支持，以保证计划免疫工作质量。

3. 各地工作发展不平衡，个别县常规免疫出现滑坡现象，其主要原因是由于专业人员报酬不能及时发放；人员更换频繁；各级防疫部门也由于专业经费的不足，技术培训减少，或者以会代训，导致业务人员素质下降，知识得不到更新，工作质量下降；由于经费的不足也使各级下基层督导检查的次数减少。今后需要加强各级人员的业务知识培训和督导检查工作。

1999 年 6 月 21 日

陕西省冷链设备装备情况统计表  
Cold-chain Equipment Status by Prefectures/Cities in Shaanxi

地市名称	冷藏车				疫苗运输车				低温冷库				普通冷库				低温冰箱				普通冰箱				冷藏箱				冷藏包			
	Refrigerated vehicle				Vaccine van				Low-temp. cold room				walk-in room				low-temp. refrigerator				Refrigerator				Cold box				Cold bag			
	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%	装备	完好	损坏	损坏率%
	Equiped	good	bad	bad rate	Equiped	good	bad	bad rate	Equiped	good	bad	bad rate	Equiped	good	bad	bad rate	Equipe	good	bad	bad rate	Equiped	good	bad	bad rate	Equiped	good	bad	bad rate	Equiped	good	bad	bad rate
西安	1	0	1	100.00	7	0	7	100.00	1	1	0		2	1	1	50.00	87	70	17	19.54	581	46	515	91.80	27	19	8	29.63	5405	1911	1494	43.88
铜川	1	0	1	100.00	4	2	2	50.00	0				1	0	1	100.00	24	19	5	20.83	89	42	47	52.81	17	12	5	29.41	586	411	175	29.86
宝鸡	1	0	1	100.00	13	5	8	61.54	0				1	1	0	0.00	77	63	14	18.18	170	108	64	37.65	61	43	18	29.51	2061	1311	750	36.39
咸阳	1	0	1	100.00	14	6	8	57.14	0				2	0	2	100.00	89	74	15	16.85	249	133	96	38.55	46	35	11	23.91	3337	1917	1420	42.55
渭南	1	0	1	100.00	7	2	5	71.43	0				1	0	1	100.00	93	68	25	26.88	307	126	181	58.96	81	50	31	38.27	3397	1202	2195	64.62
汉中	1	0	1	100.00	16	5	11	68.75	0				2	2	0	0.00	91	63	28	30.77	247	114	133	53.85	68	39	29	42.65	3668	2514	1154	31.46
安康	1	0	1	100.00	11	5	6	54.55	0				1	0	1	100.00	75	57	19	25.00	92	48	52	56.52	95	54	41	43.16	3331	1246	2085	62.59
商洛	1	0	1	100.00	7	2	5	71.43	0				1	0	1	100.00	58	40	18	31.03	105	44	61	58.10	41	21	20	48.78	1068	425	643	60.21
延安	0				15	7	8	53.33	0				1	1	0	0.00	60	41	19	31.67	180	109	71	39.44	89	52	37	41.57	2937	1055	1882	64.08
榆林	0				14	2	12	85.71	0				1	0	1	100.00	65	44	21	32.31	244	89	155	63.52	42	20	22	52.38	3380	1344	2036	60.00
省站	1	1	0	0.00	1	0	1	100.00	2	1	1	50.00	1	1	0	0.00	60	54	6	10.00	7	2	5	71.43	0				0			
合计	9	1	8	88.89	109	36	73	66.97	3	2	1	33.33	14	6	8	57.14	780	593	187	23.97	2251	871	1380	61.31	567	345	222	39.15	27150	13336	13814	50.88



## 山西省计划免疫及冷链设备情况汇报

### 一、山西省基本情况

山西省地处黄河中游,华北西部,南北长742.1公里,东西宽211.2公里,总面积15.6万平方公里。其中山区、丘陵面积约占80%,平原占20%。气候温和,四季分明,属温带大陆性气候。年平均气温12.8℃,其中最高温度36.2℃,最低温度-21.8℃。

全省设11个地(市),119个县(市、区),1910个乡(镇),142个街道办事处,32507个行政村,2868个街道居委会。

1998年底山西省总人口为3172.2万,农村人口2128.9万,占67.1%;市镇人口1043.3万,占32.9%。全省有50个贫困县,人口数900余万,约占全省总人口的30%。人口出生率16.09‰,死亡率6.17‰,自然增长率9.92‰。全省人口密度203人/平方公里。

全省卫生机构5922个,其中城市2759个,农村3163个,各级各类医院2590所。全省32507个行政村,设医疗点村31025个,占95.44%。

全省卫生工作人员有17.17万人,其中卫技人员11.1429万,占64.9%,每千人口中卫技人员3.51人。各类卫技人员中,正高级职称801人,副高级职称6295人,中级37471人,初级66862人。

全省卫生防疫机构健全,共有各级卫生防疫站132个,其中省站1个,地(市)站12个,县(区)站119个。共有计划免疫、防疫专业人员1300余人。农村乡(镇)卫生院设有防保科,村卫生所指定专人负责儿童预防保健接种工作;城市各级各类医院也设有防保科,负责所辖地段儿童的保健和预防接种。

### 二、山西省计划免疫工作情况

我省计划免疫工作围绕提高并巩固高水平的基础免疫接种率为主线,消灭脊灰为重点,控制和消灭计划免疫针对疾病为目标,在各级政府、卫生行政和业务部门的努力工作下,于1988、1990和1995年,分别实现了以省、县和乡为单位计划免疫接种率达85%的目标,1993年7月实现了“无脊灰区”的工作目标。

我省开展计划免疫和消灭脊灰的具体做法是:

#### (一)计划免疫工作采取以法制管理为主的综合管理

为保证儿童计划免疫的持续发展,1992年7月,山西省人大常委会第29次会议通过了《山西省儿童计划免疫条例》,从此,以控制传染病为主要目的的儿童计划免疫工作逐步走上了法制化管理的轨道。

各级政府认真贯彻落实《儿童计划免疫管理条例》,提高了对计划免疫工作的认识,加大了对计划免疫工作的投入。省政府在财力紧张的情况下,每年投入400余

万元用于计划免疫用苗及冷链运转经费。全省各级政府对本级计划免疫管理、冷链运转、培训、宣传等方面的工作，也给予了基本的经费保证。

## **（二）政府重视，部门协调，实行目标管理**

1991年省人民政府下发了“关于加强消灭脊髓灰质炎的意见”专门文件；1992年省卫生厅制定了“山西省消灭脊髓灰质炎计划”、“宣传活动计划以及检查考核标准”；1993年9月，经省政府同意，省卫生厅主持召开了十多年来规模最大，有县级政府领导参加的“山西省传染病防治工作会议”。同年10月，省卫生厅做出“关于在全省范围内开展消灭脊灰的决定”，并就计划免疫消灭脊髓灰质炎召开高层次研讨会。于10月15日，在“山西省贯彻预防为主方针暨全省卫生防疫站成立四十周年”庆祝大会上，省委、省政府领导与各地市专员、市长分别签定了《山西省消灭脊髓灰质炎、儿童计划免疫工作管理责任书》。在此基础上，省卫生厅每年与政府签订的目标责任书，都把计划免疫、消灭脊灰列为重要内容之一。各地市、县区、乡镇也逐级签订责任书，并实行目标管理，保证了计划免疫的开展。

在连续六次强化免疫日活动之前，省政府均召开电话会议部署强化免疫工作，发表电视讲话，明确强调计划免疫、消灭脊灰是各级政府义不容辞的责任，提出消灭脊灰的口号是：“送瘟神、抓预防，保健康、达小康”。原省委书记胡富国、省长孙文盛以及省人大、省政协等领导六次参加强化免疫日活动并题词。胡富国同志的题词是：“计划免疫功在千秋，利在万代”；孙文盛同志的题词是：“搞好计划免疫工作，确保孩子身体健康”。

自80年代初，我省即成立了以省政府领导牵头，由15个有关厅、局、委参加的“计划免疫领导协调组”，定期召开领导组协调会议，每逢计划免疫大的活动，都要召开专门会议，下发文件，保证工作的顺利完成。如在1993年第一次消灭脊灰强化免疫日活动之前，省政府主持召开了山西省计划免疫领导协调组会议，会议讨论并通过了《山西省消灭脊灰强化免疫日活动实施方案》；15个厅、局、委联合签发《关于下发山西省计划免疫领导小组成员单位会议纪要的通知》，进一步明确了各部门职责及分工要求。在连续三次全国和三次全省消灭脊灰强化免疫日活动中，省、地、县各级的计免协调组成员都积极参与强化免疫日活动，有力地保证了计划免疫工作的开展。

## **（三）积极加强队伍建设，健全计划免疫网络，提高人员素质**

计划免疫工作社会性强、服务范围广，涉及千家万户，计划免疫工作的落实，必须有一支业务素质较高的专业队伍和健全的组织网络。但是，近年来随着市场经济的建立和卫生服务职能的转变，我省计免网络、人员等都发生了变化。不少地方网络破裂，人员流失，计划免疫无法落实，工作出现滑坡，部分上岗人员未经合格培训，导致预防接种异常反应和事故发生率上升，严重妨碍了计划免疫的正常开展。

为健全计免网络，确保计划免疫工作的落实，省卫生厅于1997年制订并下发《加强全省计划免疫三级网络建设的暂行规定》、《山西省预防接种资格认证及集体预防接种管理办法》，对全省预防接种人员实行资格认证，有效地保证了计免工作的持续发展。

全省各级卫生行政及业务部门加强了对业务人员的培训工作，一般采用逐级(即省→地→县→乡→村或省→地县→乡村)培训的方法，常规的培训至少每年一次，时间为一周。根据工作需要还有一些不定期的专项培训。结合初级卫生保健工作，省卫生厅每年还要举办初保培训班，对县卫生局长、防疫站长，县医院、乡镇卫生院院长进行计划免疫知识的专门培训，每年都要培训100多人，大大地提高了整体的业务素质 and 领导管理水平。

#### (四) 计划免疫业务工作不断得到提高与巩固

1. 为提高接种率和保证免疫接种质量, 结合我省经济落后, 山区为主, 交通不便, 特别是近年来部分基层预防保健组织解体的实际情况, 我们因地制宜地采取不同的接种方式。

1. 1、城镇 (1) 县级以上医院, 新生儿出生24小时内接种卡介苗、糖丸和乙肝疫苗。(2) 建立接种门诊, 负责医院外出生儿童的接种和医院出生漏种儿童的补种。(3) 辖区内卫生防疫、妇幼及医院防保科均划片包干完成基础免疫接种。城镇门诊接种覆盖人口数占总人口数23.40%。

1. 2、乡镇二级接种 鉴于部分贫穷落后山老区, 村医待遇得不到解决等原因, 我省采取卫生院设立接种门诊和防保医生划片包村接种方式, 占总人口数24.28%。

1. 3、农村三级接种 村医负责, 以双月运转接种为主。除人口比较集中和条件比较好的卫生所进行定期集中接种外, 部分农村还需挨门逐户上门接种。此类接种方式覆盖总人口数52.32%。

#### 2、加强消灭脊髓灰质炎工作督导, 提高AFP病例监测质量

近年来, 我省始终将消灭脊灰作为重点工作来抓。首先加强对各级计免人员的培训, 明确AFP病例及报告的意义, 树立主动监测意识。第二抓好对有关临床医生的宣传培训, 使他们了解AFP病例定义及包括的疾病种类, 提高其主动报告意识。第三是注重了报告网络的建设。在全省建立了以省、地、县级医院为哨点, 各级防疫站为枢纽的报告系统。第四是实行AFP病例报告奖励制度, 以鼓励基层对AFP病例报告的积极性。第五是严格考核, 以其完成情况作为衡量计免及消灭脊灰监测工作的一项重要指标。由于采取了上述措施, 使我省AFP病例监测系统的敏感性、及时性和完整性得到进一步提高, 各项监测指标连续3年均达到了WHO规定指标(见表3)。我省已连续6年无野毒株脊灰确诊病例。

#### 3、大力推广乙肝疫苗的接种工作

同全国一样，乙型肝炎也是我省发病最高、危害最大的一种主要传染病。进入90年代以来，为推广乙肝疫苗的免疫接种，1994年全国第四次乙肝疫苗免疫接种工作会议在太原召开，促进我省把乙肝疫苗免疫接种工作纳入到法制化、制度化、规范化的管理进程。近年我省利用卫Ⅶ项目对贫困县儿童乙肝疫苗减免费用接种，给乙肝疫苗的免疫接种注入了新的活力，为保证项目顺利实施，省卫生厅专门制定了《山西省卫Ⅶ项目对贫困县儿童减免乙肝疫苗费用的管理办法》，对项目任务、实施管理、考核标准、报告验收等方面都作了明确规定。

在各级政府的关心的支持下，经各级卫生防疫人员的努力，我省广大的农村，尤其是贫困山区儿童乙肝疫苗的免疫接种工作步入了更高的台阶。在1998年实施乙肝疫苗接种的大部分贫困县儿童出生后24小时内得到乙肝疫苗免疫的及时率已达到35%以上，12月龄儿童乙肝疫苗接种率也达到85%以上。可望在“九五”期间后三年，全省农村12月龄儿童的乙肝疫苗接种率能够达到85%的目标。

#### 4、启动加速麻疹控制和消除新生儿破伤风监测工作

根据卫生部制定的《加速麻疹控制指南》和《全国麻疹监测方案》及《全国新生儿破伤风监测方案》要求，结合本省实际制定了《山西省麻疹监测方案》和《山西省控制麻疹强化免疫活动实施方案》。按照卫生部的部署及时对全省各级进行了系统培训，从今年1月份开始，已将麻疹和新生儿破伤风监测纳入了AFP监测系统，开展对麻疹病例的血清学诊断。今年1-4月份报告疑似麻疹病例182例，报告新生儿破伤风疑似病例2例。为控制麻疹初始强化免疫麻疹疫苗200万人份，各项监测进展良好。

5、由于计划免疫的开展，其针对疾病的发病得到了有效控制，1993年7月实现了无脊灰区目标。我省近五年四苗基础免疫报告接种率、针对疾病发病和死亡率及AFP病例监测情况见表1，表2，表3。

表1 山西省1994—1998年四苗报告接种率(%)

年 份	B C G	O P V	D P T	M V
1994	95.20	97.79	96.48	96.13
1995	95.82	97.77	96.31	95.69
1996	100.00	99.54	99.54	99.77
1997	95.94	97.93	97.79	97.51
1998	95.37	97.34	96.41	95.39

表2 计免针对疾病的发病与死亡率(1/十万)

年份	脊 灰		麻 疹		百日咳		白 喉		乙 肝	
	发病	死亡	发病	死亡	发病	死亡	发病	死亡	发病	死亡
1994	0.006	0	5.25	0.01	0.41	0	0	0	8.90	0.01
1995	0.006	0	4.70	0.01	0.32	0	0.003	0	8.85	0.01
1996	0	0	3.01	0	0.28	0	0	0	10.08	0.01
1997	0	0	5.30	0.01	0.37	0	0	0	13.86	0.01
1998	0	0	3.83	0	0.86	0	0	0	16.52	0.01

注：据疫情报告资料统计

表3 1996年-1998年山西省AFP监测系统各项指标完成情况

年份	AFP报告发 病率(1/10万)	48小时内调 查率(%)	合格标本 采集率(%)	标本7天内 送省站(%)	随访表75天 内报省站(%)
1996	1.11	100.00	81.92	84.95	93.62
1997	1.72	100.00	97.99	85.24	100.00
1998	1.61	100.00	98.57	95.00	100.00

### 三、冷链设备现状

我省现有的冷链设备均系1985-1987年儿基会和省政府投资装备。全省装有低温冷库14台，完好3台，完好率21%，坏损11台，坏损率79%；普通冷库19台，完好4台，完好率21%，坏损15台，坏损率79%；全省有冷藏车13台，能运转4台，运转率30%，待报废9台，占70%；全省共装备普通冰箱2496台，可使用的1583台，使用率63%，坏损停用的913台，坏损率37%。以上可使用的冰箱也都维修多次或故障频发，已到使用极限或报废期。全省共装有低温冰箱（冰排速冻器）597台，能运转的470台，占78%，已坏损127台，坏损率22%；全省地、县2级有冷藏运输箱1582个，可使用1116个，占70%，坏损466个，占30%；全省乡、村级接种点配有冷藏包27665个，可使用18540个，占67%，坏损9125个，占33%；全省县、乡2级配有塑料冰排188248个，可使用112626个，占59%，已坏损75622个，占到41%。

由于原装数量不足，人口、行政区划的变化等情况，现在全省尚应补充15M<sup>3</sup>低温冷库10台、普通冷库14台、冷藏车7台、低温冰箱390台、普通冰箱520台，全省、地、县3级疫苗运输车需更新和补充131台（山西省冷链设备现状调查表附后）。

#### 四、免疫规划工作面临的挑战和问题

##### 1、组织网络破裂

近年来，随着市场经济的发展和组织机构的调整，特别是基层人员工资报酬得不到解决，计免组织、人员极不稳定，部分基层组织解体和专业人员外流，使计免工作出现滑坡和工作前后不能衔接、不规范的状况。

##### 2、经费严重不足

我省预防保健投入在卫生事业费中比例明显偏低，仅占到全省卫生总费用的3.8%左右，计免工作又缺乏固定的筹资机制，使计划免疫工作陷入了各种冲突和矛盾的困境。

##### 3、工作发展不平衡

自然因素、经费不足、人员流失、边远贫困等诸多冲突和矛盾导致各地工作发展很不平衡。如何解决面临的实际困难，克服地区间计划免疫工作发展的不平衡，成为当前以及今后相当长时期内的工作重点和难点。

##### 4、松懈麻痹或厌战情绪影响计划免疫工作的巩固和发展

消灭脊灰已步入后期阶段，也是我们工作最艰难的时期，我省已连续6年未发现脊灰野病毒，许多人认为消灭脊灰大功告成，在一些地区麻痹和厌战情绪开始萌发。计划免疫成绩显著，相应疾病得到控制，一些领导包括卫生部门的领导产生计划免疫“达标到顶”的思想，忽略其工作的长期性与艰巨性，没有真正意识到免疫工作每年从“零”开始的真正含义，从而减少投入与支持，使本已任务繁重的计划免疫工作更加困难。

##### 5、冷链设备陈旧

我省现有的冷链设备，均系80年代WHO、UNICEF支持装备。由于产品质量，路况恶劣，电力供应等原因，有相当数量的冰箱已坏损，尚有部分设备“带病”运转，急待更新和维修。已装备的冷链车，绝大部分行驶在20万公里以上，国产冷链车有相当数量已被当地车管部门强行报废。严重影响到我省计划免疫的工作质量和接种率的巩固和提高。

一九九九年六月二十一日

附表

## 山西省冷链设备调查现状

地 市	低温冷库(台)					普通冷库(台)					冷藏车(台)					普通冰箱(台)								
	装 备	运 转		坏 损		应 补 充	装 备	运 转		坏 损		应 补 充	装 备	运 转		坏 损		应 补 充	装 备	运 转		坏 损		应 补 充
		数	%	数	%			数	%	数	%			数	%	数	%			数	%			
太原市	2	1		1		1	2	1		1		1	1	1					229	172	75	57	25	40
大同市	1			1		1	2	1		1		1	1			1		1	386	181	46	205	54	48
朔州市						1	1			1		1	1			1		1	128	67	52	61	48	28
阳泉市	1			1		1	1			1		1	1			1		1	99	74	74	25	26	24
长治市	1	1					2	1		1		1	1			1		1	244	190	77	54	23	56
晋城市	1			1		1	1			1		1	1			1		1	108	46	42	62	58	28
忻州地区	1			1		1	1			1		1	1	1					322	217	67	105	33	60
吕梁地区	1			1		1	2	1		1		1	1			1			268	174	64	94	36	60
晋中地区	1			1		1	2			2		2	1			1		1	213	150	70	63	30	48
临汾地区	2	1		1		1	2			2		2	1			1		1	252	145	57	107	43	72
运城地区	1			1		1	2			2		2	2	1		1			247	167	67	80	33	56
山西省站	2			2			1			1			1	1										
全 省	14	3	21	11	79	10	19	4	21	15	79	14	13	4	30	9	70	7	2496	1583	63	913	37	520

# 山西省冷链设备调查现状

续表

地 市	冰排速冻器(台)						冷藏运输箱(个)						冷箱背包(个)						塑料冰排(个)					
	装 备	运 转		坏 损		应 补 充	装 备	运 转		坏 损		装 备	运 转		坏 损		装 备	运 转		坏 损		装 备	运 转	
		数	%	数	%			数	%	数	%		数	%	数	%		数	%	数	%		数	%
太原市	50	41	82	9	18	30	64	33	51	31	49	1252	581	46	671	54	6717	2489	37	4228	63			
大同市	61	48	78	13	22	36	220	152	69	68	31	2207	1082	49	1125	51	11788	8554	72	3234	28			
朔州市	28	20	71	8	29	21	64	32	50	32	50	540	235	43	305	57	8568	5340	69	3228	31			
阳泉市	26	21	80	5	20	18	46	27	58	19	42	1144	859	75	285	25	9767	7470	76	2297	24			
长治市	67	59	88	8	12	42	199	163	81	36	19	3448	2675	77	773	23	18894	15653	82	3241	18			
晋城市	40	24	60	16	40	21	178	133	74	45	26	2409	1612	66	797	34	17252	13497	78	3755	22			
忻州地区	55	48	87	7	13	45	87	80	91	7	9	2212	1620	73	592	27	8010	6883	85	1127	18			
吕梁地区	74	51	68	23	32	45	222	154	69	68	31	4303	2855	66	1448	34	23449	14279	60	9170	40			
晋中地区	61	46	75	15	25	36	181	117	64	64	36	3557	1992	56	1565	44	44571	13506	30	31065	70			
临汾地区	67	54	80	13	20	54	177	123	69	54	31	3174	2263	71	911	29	16621	9731	58	6890	42			
运城地区	68	58	85	10	15	42	144	102	70	42	30	3419	2768	80	651	20	22611	15224	67	7387	33			
全 省	597	470	78	127	22	390	1582	1116	70	466	30	27665	18540	67	9125	33	188248	112626	59	75622	41			



## REPORT ON EPI WORK AND COLD CHAIN EQUIPMENT IN SHANXI PROVINCE

### 一、General Information

Shanxi province is situated in the middle range of the Yellow River and the western part of North China, 721.1 kilometers from the south to north and 211.2 kilometers from the west to east. 156,000 square kilometers with 80 % of mountainous and hilly areas and 20% of the plain area. The climate is mild, the average temperature is about 12.8℃ and varied from - 21.8℃ to 36.2℃.

Shanxi province is administratively divided into 11 prefectures. These are further divided into 119 counties(urban districts), 1910 townships, 32507 villages and 2868 residence committees.

The total population of Shanxi province is 31722000 with 21289000 in rural area and 10433000 in urban area, accounting for 67.1% and 32.9% respectively. There are 50 poverty-stricken counties with more than 9 million people, accounting for 30% of the total population. The birth rate is about 16.09‰, The death rate is 6.17‰, natural growth rate is 9.92% and the average density of the population is 203 persons per square kilometer.

5922 health institutes are distributed in the whole province with 2759 in urban area and 3163 in rural area. All sorts of hospitals are 2590 in all. So far, there are 31025 village clinics that cover 95.44% of the total 32507 villages.

The number of health staff is 171,700 with 111,429(64.9%) professional doctors, including 801 chief doctors, 6205 associated chief doctors and 37471 doctors-in-charge.

The organization structures of Sanitary and Epidemic prevention are complete in our province with 132 epidemic prevention stations at all levels, one at provincial level, 12 at prefecture level and 119 at county level. There are total 1300 EPI staff who are specially assigned for the health care and vaccination for the children in the vaccination centers of the hospitals and clinics at township and village level, and at urban level as well.

### 二、EPI work in Shanxi province

EPI work in our province achieved the goal of 85% EPI vaccination by province, county and township in 1988, 1990 and 1995 and "polio-free region" in July, 1993 centers on improvement and consolidation of higher routine vaccination coverage as principal line and polio eradication as focal point due to the effort of government, health administrative and professional departments at all levels.

The work of EPI and polio eradication in our province is related as follows:

(一) Legal management must be taken as the dominant factor in EPI comprehensive management.

In order to ensure the steady development of EPI, "Regulation of Shanxi Province on EPI for Children" was issued by the 29th Conference of People's Congress of Shanxi Province. From then on, control for infectious disease as the main purpose in EPI work got onto the right track of the management by legal system. The governments at different levels carried out "Regulation of Shanxi

Province on EPI for Children" and deepen their understanding of EPI work, so investment in EPI work has been increased under the circumstances of lacking financial resources. Provincial government invest 4,000,000 yuan(RMB) in vaccines for EPI and cold-chain operation annually. Governments at different levels guarantee the funds in the respect of EPI management ,cold-chain operation , training and propaganda,

(二) Stress of governments, coordination of departments and implementation of objective management.

Special document on "View of Strengthening Polio Eradication" was issued by our provincial government in 1991. Shanxi Public Health Bureau(SPHB) worked out "Plan for Polio Eradication in Shanxi " and "Plan for Propaganda Activity and Criterion of Inspection and Routine Check " in 1992. In September 1993, with the approval of our provincial government , SPHB chaired and convened "Conference of Prevention and Control of Infectious Diseases " which was broad in scale in recent ten years and attended by the leaders of the government at all level. In October the same year SPHB passed "Resolution on Polio Eradication with in the scope of the Whole Province " and polio eradication. October 15 , at the celebration meeting of Implementation of the policy of putting prevention first and the 40th Anniversary of the founding of Sanitary and Epidemic prevention stations in our province , leaders of our provincial governments and mayors signed "Responsibility for Management of EPI and Polio Eradication " , on the basis of this meeting , SPHB sign objective responsibility with our provincial government each year , the work of EPI and polio eradication is classified as one of the important works . Prefectures , counties and township at all levels also signed the responsibility and implement objective management to ensure EPI work .

Before NIDs for six years running , our provincial government held telephone conference and drew up EPI plan, emphasized that EPI and polio eradication were bounden duty of governments at all levels, putting forward "Clear Away God of Plague, Stress Prevention ,Keep Good Health and Make Favorable Living Condition ".as the slogan of polio eradication .Ex-secretary of our provincial party committee, Hu Fuguo, governor of our province , Sun Wensheng and other leaders at provincial level attended NIDs six times and had inscription which is "EPI Makes Contribution and Beneficence through the Ages "by Hu Fuguo ,"Make a Good Job of EPI and Keep Good Health for Children" by Sun Wensheng.

Since early 1980's "Leading Group of EPI Coordination "as the leading role of provincial government attended by 15 bureaus, committees has been established .on NIDs occasions this group would hold special meeting and issue documents, to make the work go smoothly ,For example, prior to first NID in 1993, our provincial government chaired and convened conference of leading group of EPI coordination, discussed and passed "Scheme of NIDs of Polio Eradication in Shanxi", "Notice of Conference Summary of the Member Units of Leading Group of EPI" signed and issued by 15 bureaus and committees together. This notice further defined the responsibilities and duties,

division of work among the departments. During NIDs and SNIDs for 3 times running respectively, members of EPI coordination took active part in NIDs and ensure EPI work.

(三) Strengthen Profession Structure, Perfect EPI Net Work and Improve Staff Quality.

EPI work has sociality with wide scope of service and many families involved. If EPI work is practical, there must be profession structure of higher quality and perfect net work. However as the market economy has been formed and function of health service changed, the changes of EPI net work and staff have been taken place. EPI net work has been destroyed and staff run off in some places so that EPI work is not workable and on the decline and some staff are not qualified for training which lead to the increase of abnormal reaction of vaccine and accidental rate, hinder normal development of EPI. SPHB drew up and issued 《Regulation of the Construction of EPI network at Three Levels in Shanxi》, 《Certificate Qualified for & Management Method for Mass Vaccination in Shanxi》 in 1997 to complete EPI network and ensure EPI work. It carries out qualification certification for staff in our province effectively to ensure steady development of EPI.

SPHB and professional department at all levels stress training for professionals. Routine training is at least once every year and every training takes one week. There are some irregular special training. SPIIB also conducts and gives training of primary health care and special training to directors at county and township levels.

more than one hundred people are trained every year, which greatly improve total professional quality and management of leaders.

(四)、Improve and Consolidate EPI Work

1. We take different ways according to local poor and backward conditions, transport condition, the reality of prevention health care organization breaking down in some basic unit of our province.

1.1 Urban (1), In the hospitals above county level newborn are vaccinated BCG, OPV and HBV within 24hrs. (2), Set up clinic to vaccinate infants born outside hospital and in the hospital without vaccination. (3), District health prevention station, health care center for women and children, department of health care in hospital finished routine immunization. Vaccine coverage of urban clinics account for 23.40% of total population.

1.2 Township second immunization. In view of poor and backward condition in mountain area and improper treatment of village doctors, our province take different immunization ways in which country hospital set up immunization and health care doctors give vaccination at local place. Vaccine coverage is 24.28% of total population.

1.3 Village third immunization. Take the measure that doctors are responsible for immunization and vaccination bimonthly. Except clinics with good conditions and places with higher density of population where children are vaccinated regularly, others are vaccinated from door to door which cover 52.32% of total population.

2. Enhance Supervision of Polio Eradication, Improve Surveillance Quality of AFP

In recent years, our province have been put the stress on polio eradication from start to finish. First, enhance training for EPI staff at all levels, make clear the meaning of AFP report, form active surveillance consciousness. Second, Stress propaganda and training for clinic doctors and make them understand definition of AFP and improve the quality of report. Third, Stress reasonable construction of report network.. Report systems are set up with pilot of hospitals at province, prefecture and county levels and with center of epidemic prevention station at all levels. Fourth, Carrying out award system of AFP case report to encourage basic staff. Fifth, Set up strict examination system and make it an important indicator of judging EPI and surveillance of polio eradication. Above measures being taken, the sensitivity, timeliness and completion of AFP surveillance system are improved. Every surveillance indicator meets WHO

quota set in continuous three years. There are no wild polio cases in continuous six years.

### 3. Endeavor to advance vaccination of Hepatitis B vaccine.

Like the other provinces, viral Hepatitis B is one major infectious disease that has highest incidence and danger in our province. From 1990s, the Fourth National Meeting of HB Vaccination was held in Taiyuan, in order to improve immunization of HB vaccine. It bring vaccination of HB vaccine into the legal, system and standard management. In recent years ,we made use of the Health VII Item to vaccinate children in poverty counties by reducing fee, which give fresh vitality into vaccination of HB vaccine. To make the item go through smoothly, SPHB especially made the management measure reducing fees for children in poverty counties. The definite measure was made for task ,management, the standard of the examination, report and so on.

In the support of the national and local government, the works of HB vaccinating are made a great progress with the effort of preventive staff at all levels in most villages ,especially in poverty mountain areas in our province. HB vaccination rate has reached 35% when infants were born within 24 hours in most of poverty county where HB vaccine was vaccinated in 1998. For 12 months old infant, the vaccinated rate also reached more than 85%. During the last three years of Ninth Five Years Plan ,it is expected that the vaccinated rate for 12 months old infant in whole village will reach 85%.

### 4. Start the acceleration surveillance for controlling measles and eliminating neonatal tetanus.

According to the requirement of Health Ministry and our province situation, we made "Scheme of Measles Surveillance in Shanxi" and "Scheme of Immunization for Controlling Measles in Shanxi" and give training to staff at all levels. From January this year, Measles of Neonatal tetanus were brought into AFP surveillance system, 182 suspected Measles cases and 2 suspected cases of neonatal tetanus were reported in January-April. 2000000 Measles vaccine were vaccinated to control measles,

5. As development of EPI, EPI-related disease incidence have been decreased. We achieved the goal of free polio region in July 1993. The reported rate of primary immunization for four vaccines , morbidity and mortality of target diseases and AFP surveillance are listed bellow: (Table 1, Table 2, Table 3)

Table 1 reported rate of four vaccine in 1994-1998 in Shanxi(%)

year	BCG	OPV	DPT	MV
1994	95.20	97.79	96.48	96.13
1995	95.82	97.77	96.31	95.69
1996	100.00	99.54	99.54	99.77
1997	95.94	97.93	97.79	97.51
1998	95.37	97.34	96.41	95.39

Table 2 The Morbidity and Mortality for EPI Target Disease(1/100000)

year	polio		measles		pertussis		diphtheria		hepatitis-H	
	1	2	1	2	1	2	1	2	1	2
1994	0.006	0.00	5.25	0.01	0.41	0.00	0.00	0.00	8.90	0.01
1995	0.006	0.00	4.70	0.01	0.32	0.00	0.003	0.00	8.85	0.01
1996	0.00	0.00	3.01	0.00	0.28	0.00	0.00	0.00	10.08	0.01
1997	0.00	0.00	5.30	0.01	0.37	0.00	0.00	0.00	13.86	0.01
1998	0.00	0.00	3.83	0.00	0.86	0.00	0.00	0.00	16.52	0.01

Note: Statistics on data of reported cases. 1:morbidity 2:mortality

Table 3 The index completed for AFP surveillance in 1996-1998

year	reported cases (1/100000)	cases surveyed within 48hrs (%)	qualified stool sample (%)	sample sent to the Lab within 7days (%)	follow up within 75 days (%)
1996	1.11	100.00	81.92	84.95	93.62
1997	1.72	100.00	97.99	85.24	100.00
1998	1.61	100.00	98.57	95.00	100.00

### 三、Current situation of cold chain Equipment

Cold chain equipment in our province were equipped by UNICEF and provincial government during 1985-1987. There are 14 walk-in freezers, 3 of them (21%) are in good condition, 11 of them (79%) were damaged. There are 19 walk-in cold rooms, 4 of them (21%) are in proper condition, 15 of them (79%) were damaged. There are 13 refrigerated trucks, 4 of them (30%) are in proper condition, 9 of them (70%) will have to be rejected. There are 2469 refrigerators, 1582 (63%) can be used, 913 (37%) were damaged. All refrigerators have been repaired many times. 597 chest freezers were equipped, 470 (78%) are in proper condition, 127 (22%) have been damaged. 1582 vaccine carriers are allocated to prefectures and counties, 1116 (70%) are in proper conditions, 466 (30%) are damaged. There are 27665 cold boxes at township and village level. 18540 (67%) used, 9125 (33%) are damaged. There are ice packs at county and township level, 112626 (59%) can be used, 75622 (41%) are damaged.

Due to the insufficient imported equipment and the change of the population and administrative area division. At present there will be supplementary 10 walk-in freezer (15M<sup>3</sup>) 7 refrigerated trucks, 390 chest freezers, 520 refrigerators. vaccine vehicle will be replaced at provincial, prefecture and county level and 131 will be replenished.

### 四、Problem

#### 1. destroyed net system

Recent years as development of market economic and regulation of organization, especially staff at basic level has lower wages, some of them flowed. EPI organization has been destroyed. EPI work was weakened.

#### 2. fund insufficient

The ratio of fund to health care is lower in health facilities. It is about 3.8%. EPI work is deficient in mechanism for raising money. Because of various conflict and contradictory EPI work fall into dire straits.

#### 3. imbalance development

Natural factor, insufficient fund, floating staff, poor and backward district lead to imbalance in different prefecture. It is very important work for long term that resolve actual difficulty and improve imbalance status in different at present and in future.

#### 4. Slack mood of leader

Eradication of polio came to last stage .It is the most difficult period. In our province there had been no wild polio cases for contineous six years. Some leaders think that EPI work has come to top and can be ignored Because that great success has been obtained and target disease has been controlled. Therefor EPI fund has been cut off.

#### 5.Out-of-date cold chain equipment

All of cold chain equipment are 1980's products equipped by WHO UNICEF. Because of quality of products, poor road, insufficient electricity, a lot of refrigerator were broken and should be repaired and purchased. Most of cold-chain vehicle equipped have run for 200,000 kilometers. Cold-chain vehicle made in China have been discarded as useless by local government. EPI work has been affected seriously.

## **NATIONAL PROGRAMME FOR SAFE INJECTION IN PREVENTIVE VACCINATION FOR THE YEARS 1997-2000**

### **1. Background**

Since the perniciousness of spreading hematogenous infectious diseases caused by unsafe injection has been increased constantly, it becomes a serious public health problem, this is also a problem that all circles are concerned about greatly.

Investigation shows the possibility of spreading hepatitis B by unsafe injection is great ( if hurt by syringe needle, the probability of being spread is 7% to 30% ), hepatitis B virus could survive for one week in an used syringe. Even syringe needle is changed, to use a syringe itself repeatedly is also a risk factor to spread hepatitis. In addition, high-frequency injection is a high risk factor to spread hepatitis C, it is indicated by investigation that the infection probability for those who are injected frequently is twice as that for those who are not injected.

In other countries, it is also reported from time to time that there are cases HIV is spread by unsafe injection. For example, in 1988, in a hospital in southern Russia of former Soviet Union, there were 27

young children and 4 mothers infected by HIV through unclean syringe. In 1989, in an European country, HIV spread caused by unclean injection had lasted for 9 months in 4 hospitals. From 1989 to 1990, in Rumania, HIV infection outbreak occurred among hospitalized children and children in orphanages, half of them had history of blood transfusion, but another half were infected through contaminated syringe needle and syringe.

Moreover, unclean injection may also cause abscess and septicemia etc..

The Yamuskro(?) Declaration on Safe Injection by WHO pointed out, in developing countries, 5,5 billion injections to children occurred yearly, while 10% of that number are for immunization injection, 30% of which are unsafe injection, 90% of that number are for non-immunization injection, 50% of which are unsafe injection. Along with the increasing vaccination rate and more vaccines to be used, the quality of immunization vaccination is increasingly concerned about by the society.

In China, the children's immunization vaccination rate is over 90%, from birth to pre-schooling age, each child should at least get 8 planned immunization injections. If take account of vaccines against hepatitis B, encephalitis B, epidemic encephalitis etc., and vaccines against rubella, parotitis etc. which just to be promoted recently, the number each child should get immunization injection is much more than 8. At present, there is a poor condition of practicing safe



vaccination injection in many parts of the country, the rural doctors do not fully understand the importance of safe injection, sterilization of supplies used for injection does not conform to the standardization, syringe needle and syringe are even rinsed by hot water only; moreover, since materials used for vaccination and sterilization are seriously insufficient, the rural doctors only change syringe needle but not syringe, some of them even do not change syringe needle. According to the data relating to evaluation on national planned immunization in 1996, among 3066 vaccination units, the rate of that one syringe needle and one syringe for each injection is 33.5%, the rate of that one syringe needle for each injection is only 62.1%, the rate of that one syringe needle for more than one injection is 4.8%, as a result, it constitutes a potential threat to the children's health.

In order to avoid the situation that when a disease is prevented but another disease is spread, the safety of practicing vaccination injection must be guaranteed. It is very significant to work out a national programme to guide the practice of safe vaccination injection in the country.

## **2. The goal**

### **2.1 The goal**

The incorrect practice of sterilization and vaccination injection should be eliminated and safe injection be practiced by the year 2000.

### **2.2 Progress index**

- By the end of 1997, according to the present situation in each

province, every province should work out a detailed plan for action to practice safe sterilization and injection, the plan should include specific staff training programme, provision of equipment and supplies, logistics support, monitoring and management activities etc.; and feasible financial input and annual progressive plan should also be worked out accordingly.

- By the end of 1998, a system of monitoring, supervising, reporting and evaluation should be set up and be improved and perfected as well.
- By 2000, training programme on knowledge relating to safe sterilization and injection to all health workers who practice immunization injection at township level and village level should be completed.
- Based on the present figures, the percentage of vaccination units that practice safe injection should be increased by 15%-20% yearly.
- To gradually provide each vaccination station with sufficient equipment and supplies used for vaccination injection and sterilization, a system of supplement and renewal should be set up, to achieve " one sterilized syringe needle and one sterilized syringe for each injection ".

### **3. Strategy**

To pay great attention and give support by the government and

departments concerned and to guarantee the resources needed to achieve the goal is the key in eliminating incorrect practice of sterilization and vaccination injection. The following major strategies should be followed by the health sectors at each level:

3.1 To speed up the provision of proper sterilization equipment and supplies used for vaccination injection to the vaccination units at grass root level, to give material guarantee to safe injection and better quality of immunization service.

3.2 To strengthen the training programme for the health workers at grass root level. Better quality of the health workers at grass root level is a precondition to guarantee safe immunization injection, through the training programme, the health workers who practice immunization injection should understand fully the perniciousness caused by unsafe injection, their awareness and responsibility should be improved, the knowledge, technical skill and methods relating to safe injection should be mastered.

3.3 To smoothly operate staff training, provision and supplement of supplies and equipment, monitoring, supervising and evaluation, sufficient financial input should be guaranteed.

3.4 To operate the activities of monitoring, supervising and evaluation on safe injection. To set up a supervising and guiding system to monitor and evaluate the operation of safe injection and logistics supplies etc., to improve the weak points and solve the problems in doing the work.

**3.5 To operate communication and education on health knowledge and social mobilization, to strive for attention and support from leaders at various levels; to improve the awareness of self protection of the people through health education and popularization of health knowledge and to strive for support from the society.**

**3.6 To strengthen the cooperation and coordination among sectors, particularly the health sector itself should regard safe injection as a basic policy and requirement for health service, promoting its implementation as well as carrying out supervision; meanwhile, to strive actively for the support from financial, light industrial departments etc., to guarantee the financial support for supplement and renewal of the supplies needed for safe injection as well as the quality of products; the governments at various levels should strengthen the cooperation and coordination among different sectors.**

#### **4. Technical factors**

**It is important to select the right equipment and supplies for safe injection, at present, there are two types of supplies to be selected: one is the syringe needle and syringe which can be sterilized and used repeatedly and which can be used in the countryside; the other is the disposable syringe needle and syringe which can be used in the cities and rural areas with better economic condition.**

##### **4.1 Syringe**

###### **4.1.1 Disposable syringe and syringe needle**

**Strong points: easily operated and simple training.**

**Weak points:** higher cost. If not be destroyed or be reused, it is considerably harmful to the health workers and the society.

#### **4.1.2 Glass syringe and syringe needle which can be reused**

**Strong points:** lower cost to each immunization injection.

**Weak points:** need to be rinsed and sterilized before and after use, equipment and supplies for sterilization should be available, higher requirement for operation technically.

### **4.2 Selection of equipment and supplies for sterilization and cleaning**

#### **4.2.1 High-pressure sterilizer**

**Strong points:** the mobile high-pressure sterilizer is mainly designed for the purpose of immunization injection, 40- 126 sets of syringe and syringe needle can be placed in it (depending on the model and the number of stand). Even in a higher area above sea level, it also can function properly. And chemical indicators can be used to check its function of sterilization. Easily operated and easily acceptable by the health workers.

**Weak points:** both special training to the staff who practice immunization injection and timely supplies are needed; it is inconvenient to be used in mobile immunization injection and in household.

#### **4.2.2 Boiling sterilization**

**Strong points:** the regular procedure to sterilize materials and supplies is to boil for twenty minutes, easily operated, no special supplies are needed.

**Weak points: even boiled properly, bacteria and bacilli are not be killed, the purpose of sterilization is not be easily reached, lots of fuel consumed, it is easily to lead the workers to sterilize few syringe needle and syringe. If the materials and supplies are soaked and boiled not long enough and the temperature of water can not reach 100C, the result of sterilization is not perfect, particularly in a higher area above sea level. In one word, the result of sterilization can not be controlled, no method can be used to boil to sterilize the materials and supplies perfectly.**

## **5. Method**

### **5.1 To improve awareness and to strengthen the leadership**

**The health sectors at various levels should improve the awareness for the importance to safe injection, to strive actively for the support of equipment and supplies as well as budget needed for safe immunization injection from governments at various levels. The health sectors at various levels should strengthen their leadership to this work, and to guarantee the organizing, planning and the method relating to safe injection programme.**

### **5.2 To strengthen the training programme for health workers at grass root level**

#### **5.2.1 To develop teaching materials for training programme**

**According to the requirement for safe sterilization and safe injection to develop teaching materials for training programme for health workers at grass root level.**

### **5.2.2 To develop teachers training programme**

To develop teachers training programme for the health workers at and above county level, at least two health workers from each county should be trained, they will be the teachers to carry out continuing education for those who to practice immunization injection in the countryside.

### **5.2.3 To develop training programme for rural doctors**

The health workers at township level and village level should be trained by trained teachers at county level, to make every health worker at grass root level to master the knowledge, technical skill and method relating to correct sterilization and injection, and to understand the harm of unsafe injection, to improve their responsibility, and the newly employed health workers should be trained timely. Every locality should, according to the national plan for action and based on the present situation of safe immunization injection and basic situation of the quality of the health workers, work out its own training programme, arrange necessary budget to guarantee the implementation of training programme.

## **5.3 Supplies and equipment**

### **5.3.1 Provision of supplies and supplies**

According to the method of immunization injection and the requirement of service quantity, at least one high - pressure sterilizer should be provided in a immunization injection unit. While in the most rural areas, due to the economic condition, the multiple use

syringe should be selected, in the urban areas and the rural areas with better economic condition, disposable syringe could be introduced according to the economic ability and requirement of the people.

### **5.3.2 To use injection supplies correctly**

To use injection supplies correctly is the main method for correct sterilization and safe injection. The quality of disposable syringe must be conformed to the national quality requirement; the used single use syringe must destroyed correctly according to the requirement. The multiple use syringe must be sterilized strictly before use, and be rinsed and re-sterilized timely after use, the health workers must perform their function strictly according to safe injection regulation.

### **5.3.3 Prevision of injection supplies and their supplement and renewal.**

Injection suppliess should be provided sufficiently in each immunization injection unit, the quantity should be provided based on the population served by the unit, and be estimated on the principle of one syringe and one syringe needle must be guaranteed for each injection when the immunization injection is performed; considerable quantity of injection supplies should be stored at county level and township level. It should be noted that 20% of the injection supplies which could be used repeatedly should be guaranteed to be supplemented and renewed yearly.



## **5.4 Supervising, monitoring and evaluation**

To enhance the monitoring of safe immunization injection and the evaluation on implementation of the programme as well as to enhance the exchange of information relating to monitoring in order to promote and improve the work at various levels.

### **5.4.1 To establish a supervising and monitoring system**

Using the method used in delivering vaccines, cold chain monitoring and reporting on immunization vaccination rate etc., to establish a monitoring system on incorrect sterilization and injection. To develop monitoring index including staff training, requirement of supplies and equipment and the occurrence of abscess caused by injection and other monitoring index as well.

### **5.4.2 To develop and improve monitoring activities**

Incorrect sterilization and injection may be supervised and monitored through routine reporting and periodic investigation. The monitoring index could be included in the routine reports on immunization; after each vaccination, it may be reported in combination with the report on vaccination rate, or perform the investigation on incorrect sterilization and injection in combination with the investigation on vaccination rate. In addition, evaluation may be carried out based on the implementation in different localities. Monitoring will become extremely important when the staff training and provision of supplies and equipment have been completed.

## **5.5 Social communication and health education**

Safe injection should be emphasized by communication and education through various mass media. Communication strategy and plan should be developed according to the target group of population and different purposes. The government should play a leading role and the multiple sectors should work in a way of cooperation and coordination in carrying out safe injection. Particularly, the supports from financial, light industrial sectors etc. are needed. To obtain attention and support, the local situation, planning, progress and difficulties related to safe injection should be circulated to and exchanged with departments concerned. Communication and education should be stretched to the injection supplies manufacturers to improve their understanding of the products and to strive for social donation and supports. To strengthen the communication and education to the mass people to improve their awareness of self protection and the requirement for health service quality and to mobilize people to monitor the practice of the health workers.

#### **5.6 To strengthen the cooperation and coordination within and among sectors**

The health administrative sectors at various levels are responsible directly for eliminating incorrect performance of sterilization and injection and for implementation of safe vaccination injection. The department concerned should appoint specific staffs to be in charge of the work to guarantee the information exchange and active cooperation and coordination among sectors.

### **5.7 To develop international exchange and cooperation**

**To achieve the goal to eliminate incorrect performance of sterilization and injection in immunization vaccination, initiative should be taken to obtain support from international organizations technically, financially and in other forms. In addition, information exchange and cooperation with WHO and other countries should be developed.**

- ⑦ Plan of Action to Eliminate Incorrect EPI Sterilisation and Injection Practices in China by the Year 2000 (WHOより入手)

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# **PLAN OF ACTION TO ELIMINATE INCORRECT EPI STERILISATION AND INJECTION PRACTICES IN CHINA BY THE YEAR 2000**

## **1. INTRODUCTION**

### **1.1 Why is there need for a plan?**

Immunisation coverage for China is greater than 90% for childhood immunisation by one year of age. With improvements of EPI coverage in the past several years, close to 200 million injections are given annually to children and women in child-bearing age.

With the prospect of increasing hepatitis B coverage and possibly introducing a second dose of measles, the number of infant immunisations could increase considerably. The number of injections provided through EPI is also expected to increase as coverage with tetanus toxoid in women of child-bearing age rises.

As coverage increases, and is maintained at high levels, it is appropriate that growing attention be given to the impact of EPI on disease reduction and the quality of immunisation services provided. The 1991 EPI Global Advisory Group Meeting recommended that "in their efforts to achieve or maintain high immunisation coverage, countries should ... make more efficient use of available resources, increase self-reliance, and improve the quality of services".

The effectiveness of EPI is being addressed in disease control initiatives, especially polio eradication. The safety of immunisation is implicit; however, several sources of information, including EPI reviews, cold chain assessments, and special studies, have consistently pointed to the existence of problems in sterilisation and injection practices. In several instances, equipment is available in sufficient quantity, but distribution is inadequate so that the required supplies are not available at the point of immunisation. Even when supplies are adequate, equipment is not always disposed of properly.

WHO has estimated that the cost of proper sterilisation of injection equipment and of ensuring the single needle/syringe policy is only 2% of the total cost of immunising a child.

While a policy of using a single sterile needle and sterile syringe for each immunisation has been adopted, this has not been systematically implemented. Given the risk of non-observance of the policy, a plan of action for the elimination of incorrect EPI sterilisation and injection practices is required.

Provided this plan of action correctly executed, incorrect EPI sterilisation and injection practices can be eliminated by the year 2000.

<b>Objective: eliminate incorrect EPI sterilisation and injection practices by the year 2000</b>
--

## 1.2 Dangers of incorrect injection practices

1.2.1 The most life threatening risk from incorrect sterilisation and injection practices is the inadvertent transmission of HIV. The efficiency of HIV transmission is relatively lower than for hepatitis B; however, this is offset by the lethal consequences of AIDS. Furthermore, a public perception of association between HIV transmission and immunisation could be devastating to EPI.

1.2.2 Hepatitis B poses the largest risk in terms of transmissibility as a public health problem. China counts 12 million carriers. The hepatitis B virus is extremely efficient in transmission (7-30% in studies of needle stick injuries) and is capable of surviving up to a week in dried blood, for example in reused or badly rinsed syringes. In several studies in other countries the multiple use of syringes was shown to be a risk factor for hepatitis transmission, even when changing the needle. "Hepatitis outbreaks in the 1940s first raised the spectre of hepatitis transmission by contaminated syringes. These epidemics were characterised by their clear demonstration of a distinct relationship between the time of disease onset and exposure to re-used syringes, consistent with the presently well defined incubation periods of viral hepatitis." \*

In 1964 a large survey was done into risk factors for acute hepatitis cases in Royal Air Force servicemen in the United Kingdom. The study analysed hepatitis cases occurring over a period of 5 years (1957 - 1962) for their injection history during the 6 months before onset of the disease. Unrelated and related cases were compared with controls. Unrelated cases were those not contaminated by other cases. To the population under study several vaccines had been administered through a multi-use syringe technique, changing the needle, but not the syringe between injections.

Table 1\*. Injection rate (per 100 patients), by monthly intervals between injection and disease onset.

Group	Group size	Intervals (months)					
		0-1	1-2 <sup>a</sup>	2-3	3-4	4-5 <sup>b</sup>	5-6
Unrelated	376	21.8	30.5 <sup>c</sup>	13.8	15.4	24.9 <sup>c</sup>	13.0
Related	453	20.1	12.4	19.8	18.6	13.2	14.5
Controls	245	18.7	11.4	13.1	13.1	8.9	10.6

18.6

<sup>a</sup> Incubation period of non-A non-B post-transfusion hepatitis virus: 6-9 weeks

<sup>b</sup> Incubation period of hepatitis B virus: 1.5-6 months

<sup>c</sup>  $p < 0.05$  with respect to rate in controls

The risk of transmission through reuse of needles on basis of mathematical model is calculated in table 2.

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\* Weekly Epidemiological Record, 13 November 1987

**Table 2\* : Model-based estimates of the number of cases of HIV and hepatitis B/100 000 fully immunized infants or women of childbearing age (WCBA), for specific seroprevalence and needle reuse rate (r)**

Prevalence		Infant cases/100 000		WCBA cases/100 000	
		if: r=1	if: r=4 <sup>a</sup>	if: r=1	if: r=4
HIV	Very high: 20%	51	81-190	140	230-470
	Low: 0.1%	0.27	0.43-1.1	1.3	1.4-3.6
HBsAg	Very high: 4%	980	1560-3740	600	960-2280
	Low: 0.1%	53	84-210	63	100-250

<sup>a</sup> Lower estimate assumes that the organism is transmissible to only the next susceptible, while the upper estimate assumes that all remaining susceptibles are exposed if the needle/syringe is reused

- 1.2.3 Hepatitis C poses a growing risk. As a blood-borne disease, its control is directly relevant to injection practices. High rates of injection have been shown to be a risk factor for hepatitis C infection. In one study, sero-prevalence in those who had received multiple injections was twice as high as in those who had received no injections.

### **Objective: implement the 'one needle-one syringe per injection' policy nationwide**

- 1.2.4 Abscesses have long been recognised as a consequence of unsterile injection. The magnitude is difficult to quantify, given the lack of adequate monitoring and reporting.
- 1.2.5 Injections provided by EPI may represent a fraction of the total number of injections a child is likely to receive, either from medical or non-medical practitioners. While the risk of disease transmission from EPI injections may be minor, there is still cause for concern as coverage rises (especially TT for women) and immunisation target groups expand to older children. While considerable investment is being directed toward the control of AIDS and hepatitis B, such efforts must not be undermined by faulty practices in carrying out other public health measures.

### **1.3 Applications for other health programmes (MCH, AIDS, PHC)**

Among preventive primary health care interventions, EPI provides the greatest number of injections per year and has the largest need for injection and sterilisation or disinfection equipment. However, it is not alone in requiring sterile instruments and injection practices.

- 1.3.1 Maternal and Child Health services. Equipment for delivery kits and family planning also requires sterilisation or disinfection. At peripheral levels, the same staff may be responsible for these tasks as for EPI equipment handling.
- 1.3.2 AIDS control programmes. These programmes include components on improving health worker practices with regard to proper handling and disposal of blood-borne products so as to eliminate possibilities of contamination and improve infection control.

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\* Aylward, B., Kane, M., et al

1.3.3 Primary Health Care. Antenatal care clinics, and outpatient and inpatient departments of large health centres and hospitals, and other health care settings also have requirements for sterile injection equipment and practices.

#### **1.4 Available injection and sterilisation equipment**

EPI has been a leader among primary health care programmes in developing and implementing specific technologies for maintaining the sterility of injection equipment. Much effort has been devoted to developing training material that support the correct use of these technologies. A brief overview of injection and sterilisation equipment is presented here. In China reusable injection equipment is used for immunisation in rural areas and disposable equipment in cities. This will be discussed in more detail in Section 5.

The elimination of incorrect EPI sterilisation and injection practices is attainable using currently available equipment and technologies. New technologies, recently available (autodestruct single-use syringes) and currently under development (redesigned jet injectors) may enhance the possibility or the ease of reaching this goal, particularly in situations where the conditions of correct use of reusable equipment can not be met.

Injection equipment includes reusable syringes and needles and disposable syringes and needles, intended for a single use before discarding. Reusable syringes made of glass, nylon, or plastic, are designed for a minimum of at least 30 uses, but their actual life is variable, depending upon the type of syringe and field conditions.

For reusable needles and syringes, a variety of types of sterilisation and disinfection equipment is available. These include portable steam sterilisers, designed specially for use with needles and syringes used in EPI; autoclaves in standard use in hospitals and other large facilities; and boiling pans for high level disinfection by boiling. In some countries, the introduction and use of steam sterilisers, instead of disinfection through boiling, has served to improve sterilisation and injection practices and was accompanied by a marked reduction in reports of abscesses, contributing to a better acceptance of EPI by mothers.

**Objective: replace disinfection by boiling of needles and syringes used for EPI by steam sterilisation nationwide**

## **2. SITUATION ANALYSIS**

### **2.1 Current practices**

Obstacles to safe injection and sterilisation practices fall into 2 broad categories: training or performance deficiency, or supply/logistics problems. These include: (1) problems with boiling, because instruments are boiled for too short period, at too low temperatures, without full immersion, and without clear segregation of clean and dirty equipment; (2) sterilisation equipment is not always used properly, due to inadequate training; (3) a sterile needle is used for every injection, but the same syringe is reused several times without sterilisation; (4) supplies and equipment are available at certain levels, but are not adequately distributed to all health facilities.



### **3. OBJECTIVES AND TARGETS**

#### **3.1 Objective**

To eliminate incorrect EPI sterilisation and injection practices.

#### **3.2. Targets**

Towards this end, the provinces will have:

1. Developed a detailed plan of action to implement safe sterilisation and injection practices. The plan will specifically address issues of training, supply and logistics, monitoring and supervision, and procurement and budget. (by ?)
2. Adopted and disseminated to all health workers a policy defining and mandating the correct use of safe injection and sterilisation practices. (by ?)
3. Calculated, as first step in implementing the country plan, the estimated requirements for needles, syringes and sterilisers. (by ?)
4. Provided updated or refresher training to at least 2 personnel per each fixed facility providing immunisation services in the use of correct injection and equipment sterilisation practices. (by ?)
5. Established at least 10% of counties where correct sterilisation and injection practices are routinely carried out. (by ?)
6. Institutes annual reporting to WPRO of information on injection and sterilisation practices. (by ?)

By the end of the year 2000, incorrect EPI sterilisation and injection practices will be eliminated.

### **4. STRATEGIES**

Co-ordination and co-operation among the ministry of health, the ministry of finance and different levels of local government will be essential to identify all existing resources, define future needs, budgets and sources for funding. Systems for monitoring the supply and distribution of sterilisation and injection equipment will need to be established at all levels of the health system. Information for the health sector for eliminating incorrect EPI sterilisation and injection practices will be essential to gain and maintain support for the initiative. Training, communications, and information dissemination will need to be developed as part of plans. Experts should be involved in formulating and implementing the plans, and adequate resources must be provided.

The key strategies to achieve elimination of incorrect EPI sterilisation and injection practices are as follows:

1. Improve the process of selection of appropriate sterilisation and injection equipment.
2. Upgrade sterilisation and injection equipment supply and distribution systems.
3. Institute monitoring and supervision procedures to monitor logistical issues and health worker practices.

4. Reinforce basic and in-service training of health workers and supervisors on correct EPI sterilisation and injection practices including development of systems for rapid information dissemination reaching to all levels.
5. Secure adequate budget and funding sources to ensure that the policy of safe EPI immunisation practices can be implemented.

## 5. TECHNICAL ELEMENTS

The principal means for achieving safe injection and sterilisation practices is through the correct use of equipment designed expressly for this purpose. In terms of equipment, there are currently 2 major equipment choices that can be used to provide safe, sterile injections: reusable syringes and needles, and disposable syringes and needles. China uses reusable equipment in rural areas and disposable equipment in the cities. Recent developments to reduce the risk of transmission and to eliminate the possibility of reuse of disposable needles and syringes are the so-called 'auto-destruct' syringes on the one hand and the low workload jet injector on the other. Table 2 gives an indication of the relative risk of transmission through the different types of equipment. Advantages and disadvantages of the use of disposables and reusables are described in more detail.

*Table 3\*: Comparison of the potential risks of transmitting bloodborne pathogens through specific unsafe injection practices with four types of injection equipment*

Injection equipment	Transmission route:		
	Patient-to-patient	Patient-to-HCW	Patient-to-community
Sterilizable	<i>High risk:</i> equipment reused without sterilization	<i>High risk:</i> needlestick injuries when cleaning equipment	<i>Low risk:</i> needlesticks owing to unsafe disposal of needles
Disposable	<i>High risk:</i> equipment reuse instead of disposal	<i>Medium risk:</i> injury during reuse, recapping or disposal	<i>High risk:</i> reuse within and outside of the medical sector
Autodestruct	No risk	<i>Low risk:</i> needlesticks during recapping or disposal	<i>Low risk:</i> needlestick injuries owing to unsafe disposal
Jet injector	<i>Low risk:</i> continued use with contaminated injection nozzle	No risk	No risk

### 5.1.1 Disposable syringes and needles

**Advantages:** The chief advantage is ease of use. Little special training is required, although the need and procedures for proper disposal should not be overlooked.

**Disadvantages:** Disposables are more expensive to use than reusables. There is a very substantial risk of inappropriate disposal, which can result in deliberate reuse, or risk of needle stick injuries, both to health workers and the community. Appropriate disposal containers should be supplied where disposable equipment is used. Compliance in using them, however, assumes that there is not a greater demand for needle/syringe reuse than for their disposal.

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\* Aylward, B., Lloyd, J., et al.

### **5.1.2 Reusable syringes and needles**

**Advantages:** WHO has calculated that plastic reusable syringes are less expensive per fully immunised child than disposables (RMB Yuan 0.3 - RMB Yuan 0.56 for reusable, including sterilisation costs, versus RMB Yuan 0.64 for disposables). The glass syringes used in China, can be used 50 to 100 times, if handled carefully. The use of reusable requires less reliance on timely resupply. Safety issues concerning disposal and illicit reuse are of much smaller magnitude than with disposables.

**Disadvantages of reusable syringes and needles:** Additional effort is required on the part of the health worker to sterilise the equipment. Needles and syringes need to be handled, cleaned and washed, and needles checked for barbs and sharpened when required.

## **5.2 Selection of sterilisation or disinfection equipment**

### **5.2.1 Steam sterilisation**

**Advantages:** Portable steam sterilisers designed specifically for EPI are available, which hold from 40 to 126 syringes and needles (depending on the type of steriliser and the number of racks) and range in the price from US\$ 26 (Chinese model) to US\$ 120. These can achieve a condition of sterility, using less fuel than is required for disinfection by boiling, even at high altitudes. The desired outcome can be easily obtained (relative to boiling) in that all needles and syringes in a steam steriliser are exposed to the same temperature for the same duration. Chemical indicators can be used to verify that that sterilisation has actually occurred. The sterilisers have proved relatively easy to use and are well accepted by health workers. Racks can be used for either plastic or glass syringes. The rack design lends itself to segregation of clean and dirty equipment.

**Disadvantages:** Special training and the availability of the equipment must be assured. Bulk and weight of the sterilisers can be deterrents to use at outreach sessions. In hard water areas, steam sterilisation can contribute to the rapid ageing of syringes. Gaskets and safety valves require annual replacement.

### **5.2.2 Boiling**

**Advantages:** High level disinfection through boiling of instruments for 20 minutes is a familiar procedure that is easy to carry out. It requires no special equipment; however, the use of a standard, covered boiling pan with lift-out rack can help to promote proper practice.

**Disadvantages:** Boiling, even if done correctly, does not destroy bacterial spores (tetanus), so a sterile state can not be achieved. There is also a very substantial risk with boiling of inadequate duration and level of heat exposure. If carried out correctly, a great deal of fuel is consumed, which easily leads to faulty practices of boiling too few needles/syringes. Instruments may be boiled for too short a time or immersed, sometimes incompletely, in water that is far below 100°C, especially at high altitudes. It is a common practice for health workers to add and withdraw instruments constantly from the same boiling vessel, raising the likelihood that none of the equipment is disinfected. Overall, there is little control over the outcome and no means of validating that boiling has succeeded in disinfecting the equipment.

## **5.3 Logistics support**

For all injection related equipment, there are 2 separate, but related issues: supply and distribution. In EPI reviews where problems have been noted, the major issue has frequently been one of supply. Health workers may devise inadequate solutions when faced with short supplies or the fear of short supply in the future.

### **5.3.1 Supply and distribution of syringes and needles**

Annual requirements will have to be calculated and sufficiency of supply and distribution of syringes, needles and sterilisation equipment should be assessed. This can be done on the basis of the following questions: (1) Who is in charge of procurement and distribution?; (2) Are calculations adequate for estimating routine and special needs, including special disease control efforts?; (3) Were sufficient quantities received? If not, why?; (4) Were stocks provided on an annual basis, to replace worn-out equipment, down to the peripheral level? Weak points in the system will need to be identified, corrective actions suggested, and associated costs estimated.

### **5.3.2 Supply and distribution of sterilisation equipment**

The equipment of choice for sterilising reusable needles and syringes is the portable steam steriliser, especially at smaller facilities. In larger hospitals, autoclaves or other larger pressure cookers/sterilisers should be available. If so, their availability for sterilising EPI equipment should be assured. Auxiliary equipment includes, on an occasional basis, steam sterilisation indicators. A source of heat adequate to ensure the proper operation of the steriliser, plus fuel, are also absolute requirements for steam sterilisation or high level disinfection by boiling.

The size of steriliser needed, will depend upon the facility's target population and session size. The same information will need to be taken into account in calculating the number of syringes and needles required.

### **5.3.3 Resupply of equipment and spare parts**

Issues of resupply need to be given high priority, as seemingly minor problems become major ones when health workers are faced with inadequate supplies.

**Syringes and needles.** Resupply will need to be made on an annual basis. Reserve stocks must be maintained at all levels. Capability of staff at various levels will require strengthening to assure that skills are sufficient for reordering and delivering supplies in a timely way. Principles of minimum stock levels and lead times should be reviewed, and systems for allocating and delivering supplies given special attention. A contingency plan should be prepared that designates appropriate actions to take when supplies of syringes and needles are insufficient.

**Steam sterilisers or equipment for high level disinfection (boiling).** All resupply should focus on the objective of replacing boiling equipment by steam sterilizers.

### **5.3.4 Spare parts and consumable items.**

Steam sterilisers require replacement, approximately every year, of rubber gaskets and safety pins. Without the gasket, the steam steriliser does not function. BCG syringes and reusable plastic syringes require periodic replacement of o-rings. Minimum stock levels must be established properly. Supply and distribution of spare parts will need to be improved. Storage points need to be established at township level to resupply areas of the country.

## **5.4 Training and information dissemination**

### **5.4.1 Training**

Training in support of safe sterilisation and injection practices (how to give vaccines, sterilisation and injection equipment, maintenance, ordering of equipment) has long been a standard element in EPI training. Yet, on the one hand, the general introduction of steam sterilizers requires training for those not used to that equipment, and, on the other hand, problems persist and are widespread, as staff do not apply what they have learned or untrained staff are supplied. Additional competency-based training will be required to address the specific problems that result when the

health worker is faced with common, difficult situations: lack of adequate supplies of syringes and needles, sterilisation equipment, fuel and disposable equipment.

Such training would be an opportunity to introduce the concept of a minimum standard of injection practice. This standard would act as a guide to determine the appropriate actions to take under less than ideal circumstances and would indicate when corrective actions are needed.

Additional attention will also need to be devoted to further alerting health workers as to the danger of possible consequences of their improper injection and sterilisation practices. The merits of steam sterilisation as well as the risk of multiple use of syringes should be stressed. The objective of this element of training is to create demand for safe practices as a norm among health workers before the public demands safe practices and finds that they are not available.

#### **5.4.2 Information dissemination and exchange**

A strategy and plan for the dissemination and exchange of information on improving sterilisation and injection practices will be established. This should include the following type of information, target groups and forums:

- Exchange of information during EPI workshops and other PHC meetings (to promote intersectoral co-operation).
- Production of selected support materials with health workers as target - e.g., posters or pamphlet.
- Selected materials directed towards the community. For example, the use of steam sterilisers as a tool for public relations.

WPRO will take a co-ordinating role and act as a clearing house for the exchange of information among countries.

#### **5.5 Monitoring and evaluating**

Currently, the magnitude of the problem of incorrect EPI sterilisation and injection practices cannot be accurately estimated because measurement methods are not yet well developed. It is also difficult to measure performance directly, quantitatively, or accurately (since study methods may alter the performance of the staff being observed).

Surveys employing direct observation will provide useful information on health workers' technical knowledge and practice under supervised circumstances, but are insufficient for gauging routine practice. As such, injection practice surveys will provide a useful baseline for assessing technical knowledge, and in a briefer form, can serve as a supervisory tool.

A new monitoring and surveillance system, with specific reporting requirements, will need to be established, following the model of vaccine distribution and cold chain monitoring. This system should include monitoring of abscesses following immunisation, since whether sterile or otherwise, they represent an outcome of faulty injection practice.

In addition to the use of routine statistics an initial baseline study of sterilisation and injection practices needs to be carried out. Annual surveys using health facility survey also needs to be conducted to validate indicators and provide data on practices.

### 5.5.1 Proposed indicators

Systems for collections of data and feedback will need to be developed. The following indicators allow the monitoring of the quality of sterilisation and injection practices:

INDICATOR TYPE	INDICATOR FOR
<b>1. Adequacy of supplies of needles and syringes at different levels.</b>	
• frequency and regularity of supplies to each facility	quality of supply (planning)
• frequency and regularity of orders from each facility	quality of ordering (planning)
• ratio of quantities delivered to quantities ordered	efficiency of supply
• ratio of quantities ordered to number of injections given over the same ordering period	stability of practice, provided conditions are known
• reports of supplies falling below critical levels during a given period	efficiency of supply or ordering procedure
<b>2. Extent of use of steam sterilisation.</b>	
• proportion of liable facilities provided by steam steriliser	capability of provision of safe injections; quality of supply
• proportion of liable facilities with staff trained in use of equipment	capability of provision of safe injections; quality of training system
• proportion of liable facilities that have been supplied with adequate stocks of spare parts	capability of provision of safe injections; quality of supply and ordering
• proportion of liable facilities where steam sterilisers are observed to be in use	capability of provision of safe injections
<b>3. Adverse event following immunisation.</b>	
• number of reports received of abscesses	quality of reporting; relative quality of injections
• proportion of reports that are investigated	quality of reporting and/or supervision; quality of injections
<b>4. Proper disposal.</b>	
• proportion of health facilities following correct disposal procedure	quality of disposal procedure; relative risk of contamination
• ratio of injectable immunisations given to number of syringes/needles used at facility	stability of practice, provided conditions are known

### 5.6 Supervision

Supervision at the health centre level should take 3 forms: observation of practice, direct questions to staff, and records review. A system for analysis of data and feedback to health workers will be required.

In addition, supervisors should be prepared to investigate reports of abscesses and determine, if possible, if they are sterile abscesses resulting from incorrect injection technique, or due to unsterile conditions. Reports of abscesses are rare, but their absence also cannot be taken to indicate good practices. The report of an abscess should be used as an opportunity to provide additional attention and supervision on safe sterilisation and injection practices.

## **5.7 Operational research**

Given that the main issues relate to implementation of available technologies rather than scientific problems, it will be appropriate for research to have an operational focus. Research should focus more on increasing the correct use of existing equipment than on testing new equipment. Possible topics for research may include:

- Research on injection practices. Injection surveys should be supplemented with qualitative research into beliefs and attitudes of the public and health providers toward injections, as they may determine (as much or more than technical knowledge) the reasons why key behaviours towards safe injection procedures are not carried out.
- Assessments of distribution/resupply problems and operational research on revised approaches to distribution
- Evaluation of different approaches and indicators for monitoring and supervision.
- Investigate integration/co-ordination of EPI and MCH services of sterilisation equipment.
- Adaptation and testing of locally produced equipment.
- Post-market research into newly introduced technologies.
- Research on use of portable racks (steriliser drums) which can be carried to outreach sessions

Field trials for alternative injection technologies, such as a low workload jet injector now under development, may also be undertaken through the auspices of WHO/EPI HQ. These studies should include consideration of cost, cost-effectiveness, user acceptability and specific, appropriate scenarios for use.

## **6. PLANNING AND CO-ORDINATION**

### **6.1 Country level**

A detailed plan of action, containing sections addressing policy formulation, selection of equipment, supply, resupply and disposal issues, training and information, monitoring and supervision, and budget should be developed.

The successful adoption and implementation of the plan will require commitment of all those involved, as well as funds for implementation. One person within EPI, will be assigned responsibility for co-ordination and implementation of the plan of action, and for its periodic updating, as needed. Persons at subnational level will be made responsible for the elimination of unsafe injection practices in their areas.

Within the national EPI committee a subcommittee will be established that is charged with responsibility for ensuring the elimination of incorrect EPI sterilisation and injection practices. Co-ordination will be required with other departments and units in the Ministry of Health, such as MCH, AIDS, to promote safe practices in all health activities that involve injection and equipment sterilisation.

China is asked to submit to WHO on an annual basis information on any reports of observations of incorrect EPI sterilisation and injection practices, reasons and proposed solutions or

corrective actions. As an intermediate step toward country-wide implementation of the plan, pilot areas will be rapidly established where correct practices will be ensured.

## **6.2 International participation**

International sharing of expertise, funding and support will be required if the goal is to be achieved by the year 2000.

Major players, whose support in eliminating incorrect EPI sterilisation and injection practices are expected, include WHO, UNICEF, bilateral donors and nongovernmental organisations. Donors should be fully apprised of the efforts to improve sterilisation and injection practices. The financial support of these donors should be secured, especially for equipment and supply procurement.

To secure the co-ordination of all international agency inputs, the EPI Interagency Co-ordinating Committees (ICC), with representation from all the agencies supporting health activities should be involved. The ICC in each country should review the national plan of action to identify the types of assistance each of the agencies can provide to eliminate incorrect EPI sterilisation and injection practices.

The WHO will co-ordinate for the Western Pacific all activities related to the elimination of incorrect EPI injection and sterilisation practices in the region.

WHO will make every effort to provide technical support to countries requesting support for this initiative. Such support may take several forms: for example, advising on records reviews or surveys to determine specific problems in supply and distribution issues; or review of country plans of action. In addition, the Regional Office will exchange and disseminate information on country experiences and on new developments pertinent to injection practices.

WHO will play an additional role in conducting operational research, particularly in the field testing of new sterilisation and injection technologies at the global level

## **7. RESOURCE REQUIREMENTS**

It is expected that the cost of improving techniques will be far less than the cost of treating hepatitis B or AIDS cases caused by faulty techniques, particularly if all injections are considered.

The exact cost requirements will depend on the equipment already available and still required. This needs to be calculated.



## 8. TIMETABLE

	1996				1997				1998				1999				2000			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Plan of action</b>																				
• Develop a detailed plan of action.																				
<b>Surveys</b>																				
• Conduct initial quality/attitudes/practices survey.																				
• Conduct annual surveys using health facility survey to validate indicators and provide data on practices.																				
<b>Training</b>																				
• Provide updated or refresher training to at least 2 personnel per each fixed facility (how to give vaccines, sterilisation and injection equipment, maintenance, ordering of equipment).																				
• Extend training beyond EPI to other primary health care personnel as well.																				
• Reinforce basic and in-service training of health workers and supervisors.																				
<b>Surveillance</b>																				
• Institute monitoring , supervision and surveillance procedures to monitor logistical issues and health worker practices. This system should include monitoring of abscesses following immunisation.																				
<b>Logistics</b>																				
• Calculate the estimated requirements for needles, syringes and sterilisers and assess sufficiency of supply and distribution.																				
• Upgrade sterilisation and injection equipment supply and distribution systems.																				
• Establish storage points at provincial, county and township level to resupply areas of the country.																				
• Establish at least 10% of counties where correct sterilisation and injection practices are routinely carried out.																				
<b>Communication</b>																				
• Institute annual reporting to WPRO of information on injection and sterilisation practices.																				
• Establish a strategy and plan for the dissemination and exchange of information.																				
<b>Research</b>																				
• Focus research on operational issues.																				

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- ⑧ Review of the Expanded Programme on Immunization and Poliomyelitis  
Eradication Activities in China

**REVIEW OF THE EXPANDED PROGRAMME ON IMMUNIZATION  
AND POLIOMYELITIS ERADICATION ACTIVITIES IN CHINA**

**10-25 May 1999**

**Summary of Findings and Recommendations**  
**of the MOH, CDC, JICA, UNICEF, WHO Review team**

# **REVIEW OF THE EXPANDED PROGRAMME ON IMMUNIZATION AND POLIOMYELITIS ERADICATION ACTIVITIES IN CHINA**

**10-25 May 1999**

## **Summary of Findings and Recommendations**

### **1. Introduction**

At the invitation of the Ministry of Health, review teams composed of international and national experts from national and provincial level in China, UNICEF, WHO, Japan International Cooperation Agency (JICA) and the Centers for Disease Control and Prevention (CDC), Atlanta, USA, visited 15 provinces/ municipalities/ autonomous regions to review the Expanded Programme on Immunization (EPI) and poliomyelitis eradication activities. The objectives of the review were to identify the achievements and progress of EPI and the main issues currently facing EPI, including: (1) sustaining high quality immunization services; (2) ensuring expansion of the programme through the introduction of new vaccines; (3) ensuring the financial stability; and (4) to make recommendations to address these issues.

The review methodology included the use of detailed questionnaires and random selection of facilities in higher and lower income areas to be visited below provincial level and emphasized routine EPI management and implementation. The following findings and recommendations are based on visits at provincial level and to randomly selected health facilities and hospitals in 27 prefectures, 31 rural counties, 31 townships and 31 immunization sites.

### **2. Achievements**

- Continued government interest in the EPI was shown by government leaders at each level meeting with the review team members in all areas visited.
- No polio cases have been reported from anywhere in China for more than three years, and the acute flaccid paralysis (AFP) reporting rate at national level in 1998 remained above the target of 1.0 per 100,000 children less than 15 years.
- China has started preparations for certification of polio eradication and the national polio eradication certification committee held its first meeting in 1998. Provincial expert AFP review panels have been formed and held meetings in all the provinces visited.
- The Ministry of Health reorganization of the EPI Division in 1998 to include all vaccine preventable diseases improved management and implementation, particularly for hepatitis B.
- The reporting system for routine immunization coverage has been expanded in 1999 to include individual doses of DPT and polio vaccine (OPV), hepatitis B immunization and additional doses for children older than one year of age.

- An enhanced national surveillance system with active surveillance for neonatal tetanus (NT) and measles was started in 1999, building on the successful AFP surveillance system.
- Sub-national immunization days (SNIDs) were successfully carried out in the 1998/1999 winter season in all provinces visited.
- Some provinces have procured cold chain equipment with their own funds in recent years.

### **3. Issues**

Despite the considerable achievements mentioned above, the review team is concerned that constraints to the sustainability of the immunization programme are becoming more serious and may jeopardize what has been achieved to date. In addition, the great improvements in quality and expansion of the programme seen in the last 15 years are no longer being further augmented. In many provinces, the current immunization programme is being made to pay its own way on an ongoing basis which does not allow sufficient funds for properly running the programme, let alone further improving and expanding the programme. The review team is concerned that the EPI in China may be nearing a precipice, and that unless urgent action is taken to reinvigorate and bolster government financial support, the gains made to date may be undermined.

#### **3.1. Government support for EPI and Funding**

The funds provided for EPI by governments at each level are not commensurate with the workplans prepared and the outcomes expected of the programme. While all provinces identified sufficient funds to cover vaccine requirements in 1998, in most areas there were insufficient funds for EPI operations, cold chain, safety of injections, training and supervision. In some instances, the additional costs for the programme were passed on to lower levels, with poor areas having difficulty meeting these costs.

Due to financial constraints at virtually all levels, vaccines other than the four standard EPI vaccines are being implemented on a commercial basis rather than as public health interventions for the common good. In some instances commercialization of the immunization programme may have an adverse effect on public health. For example, introducing rubella vaccine without achieving high levels of immunization coverage may lead to a shift in the age of infection to older women and possibly to increased rates of congenital rubella syndrome (CRS). An inadequate cold chain for privately purchased hepatitis B may lead to immunizing of children with impotent vaccine.

Problems with government support and provision of funds for the World Bank health project 7 were found in several provinces visited. Some finance departments are not promptly approving counterpart funds or are requiring health bureaus to cover the costs of the project from their own funds. These practices can reduce the intended benefits to the EPI of the World Bank project as well as delay implementation.

### **3.2. Routine EPI, including addition of new vaccines**

Despite reports of at least six immunization rounds per year in most areas visited and reported very high immunization coverage, the team has concerns that the coverage and quality of immunization services is actually declining, particularly among the floating population and out of plan children. Routine immunization reports from many counties and townships showed much lower estimated coverage (based on a calculated number of newborns arrived at by multiplying the population by a birth rate derived from non-EPI sources) than reported coverage. Review of immunization records at village clinics indicated that some floating and out of plan children are not being covered by the immunization programme. The new routine EPI coverage reporting system was found to be a useful tool in identifying lower level facilities with problems in management of EPI, yet data were usually not being analyzed and acted upon.

Additional vaccines are being added to the immunization programme which are supplied by manufacturers responsible to ministries other than the Ministry of Health. The team is concerned that the new vaccines should be introduced based on public health considerations rather than based mainly on the market situation. The varied sources of hepatitis B vaccine contribute to the problems in monitoring and controlling the programme. Data on coverage with hepatitis B vaccine was not readily available, but is reportedly still low in poor rural areas. Responsibility for hepatitis B immunization was often divided among several different departments of the provincial EPS. The MOH reorganization of the EPI Division to include hepatitis B vaccine was not reflected at the provincial EPS in all provinces visited. MOH guidelines are required which focus on public health aspects of hepatitis B control and include (a) consolidation of the management of all aspects of hepatitis B under the EPI section at each level, (b) immunization management and monitoring, (c) disease surveillance, (d) improved vaccine procurement and management (including maintaining the cold chain), and (e) coordination with other involved ministries. Several innovative initiatives to increase hepatitis B immunization coverage are being implemented under the World Bank health project 7 which can provide useful experiences for further increasing coverage.

### **3.3. Safe injections**

Despite the MOH guidelines issued in 1996, the safe injections situation in the provinces visited remains very serious. Problems with maintaining the 1 sterile syringe – 1 sterile needle – 1 child policy, or problems with proper disposal of used disposable syringes were found in almost all the areas visited. Shortages of equipment and incorrect knowledge (such as the incorrect belief that using the same syringe while only changing the needle is an acceptable procedure) still were found to be widespread. Insufficient injection and sterilization equipment was widely found. Even where equipment had been provided, such as under the World Bank health project 7, the equipment had not always reached staff and the training was not of sufficient quality to enable all staff to use new equipment properly. Responsibility for maintaining and funding of safe injections was frequently placed on the lowest levels, rather than covered by the government as an integral part of immunization services.

Both glass reusable syringes and reusable needles and plastic disposable syringes can assure safe injections if properly used, including sterilization and disposal after use. Efforts need to be increased to identify Chinese manufacturers of autodestruct disposable syringes and to

encourage use of this new technology in areas using disposable syringes. Injection techniques also need to be improved. Training materials need to be modified as necessary to improve their impact on staff and provision of adequate supervision increased. If present conditions continue, China will not achieve the national and WHO Regional goals of achieving 100% safe EPI injections by the year 2000.

### **3.4. Cold chain and vaccine management**

Vaccine management and forecasting remains a problem, with overstocking of vaccines found as well as vaccine shortages. Vaccine management tools as currently used are inadequate and do not allow senior staff to closely monitor the vaccine situation and distribution system to make it as efficient as possible. With the increased cost of vaccines, doses of vaccines which must be thrown out before use represent wasted money which could have been used for other EPI activities.

Old cold chain equipment, shortages of equipment and incorrect cold chain management were still found in many places visited. This reflects an inadequate investment in cold chain equipment over the last 10 years by governments at each level and insufficient training and supervision. Replacement plans for cold chain equipment were not found in almost all the provinces visited. The shortages of cold chain equipment was found to result in cold chain failures which could affect the efficacy of the vaccines in some areas visited.

### **3.5. Supplementary immunizations**

Sub-national immunization days (SNIDs) were carried out in all the provinces visited. However, the success of the SNIDs in reaching and immunizing the highest risk children varied. The success of the SNIDs in covering the floating population in large cities varied greatly among the provinces, with some cities utilizing successful strategies of increasing immunization points, using mobile teams and extending the dates of the SNIDs to achieve higher coverage, while others were still using outdated, and less successful, strategies.

### **3.6. Disease Surveillance and polio eradication**

Problems with completeness and accuracy of AFP surveillance still exist as evidenced by unreported cases found at hospitals visited and reported AFP cases reinvestigated by review team members which were found to not be AFP. The work of the AFP expert panels has improved, as provinces prepare for certification of polio eradication, but problems still remain in obtaining sufficient funds to fully utilize the panels to work according to MOH guidelines.

Enhanced neonatal tetanus (NT) and measles surveillance, as additions to the AFP surveillance system, were initiated in 1999, but the quality of implementation has been limited to date although it is still early in the implementation phase. Coordination between the MCH and EPS on NT surveillance is still inadequate, with case information not being exchanged. The teams found a general lack of regular epidemiological analysis of surveillance data, feedback to the appropriate levels, and active response based on the data.



#### 4. Recommendations

Recognizing the tremendous achievements of the immunization programme to date, the review team makes the following recommendations to address the issues mentioned above and to sustain and further improve the EPI programme. It is noted that several of the recommendations below were made during last year's review, and are reiterated because no progress has been observed over the ensuing year.

- (1) Government responsibility should include immunization for all newborns with potent vaccine kept under proper cold chain and injected safely. Sufficient funds will need to be allocated at each level based on this concept. Additional funds need to be provided for poorer areas
- (2) Following the example of most other countries, both developed and developing, the national government should allocate funds to purchase vaccines for the routine EPI to ensure an adequate supply. Such national investments will enable government funds at lower level (e.g. provincial) to be used to improve the quality of EPI operations, acquire needed equipment, and enhance training and supervision.
- (3) In recognition of the importance of EPI, it should be specifically mentioned in the 10<sup>th</sup> national Five Year Plan currently being prepared.
- (4) Given the proven cost effectiveness of hepatitis B vaccine, and the documented hepatitis B carrier rate in China of more than the WHO threshold of 8%, hepatitis B should be included as a standard EPI vaccine. A special policy for providing hepatitis B vaccine in poor areas should be formulated to promote high coverage.
- (5) MOH should issue guidelines to the provinces on the use of new vaccines (such as Hib, rotavirus, MMR, rubella).
- (6) MOH should issue guidelines, analysis forms, computer data analysis programmes and conduct further training to improve the quality of data at all levels and the analysis and utilization at provincial level of the data from the recently introduced routine immunization reporting system to improve programme management and supervision.
- (7) MOH needs to establish an intensified programme and take urgent actions to work with the provinces to eliminate all remaining unsafe EPI injection practices to meet the year 2000 goal. Health staff at all levels need to be informed that only injections using 1 sterile syringe – 1 sterile needle – 1 child are acceptable.
- (8) In order to optimize the use of increasingly expensive vaccines, vaccine stock management should be given a higher priority, and supervision and training carried out to allow adequate monitoring of vaccine utilization and stock balances at each level.

- (9) Cold chain inventories need to be completed in all provinces and equipment replacement plans prepared. Adequate funding of cold chain equipment repair, maintenance and replacement will be required to assure continued maintenance of vaccine potency.
- (10) Polio eradication activities will need to be continued until global certification of polio eradication. AFP surveillance needs to continue to receive high priority, with improved active surveillance and coordination with hospitals. Continued coordination of polio eradication efforts with neighboring polio-endemic countries is still important.
- (11) SNIDs are needed in 1999/2000 and should be narrowly focused on border areas and high risk populations. Emphasis on sufficient detailed planning and allocation of resources to achieve as high coverage as possible in the highest risk children is essential.
- (12) Acknowledging the important role played by the international partner agencies in the EPI in China, the review team recommends that these agencies continue to support the EPI and poliomyelitis eradication effort in China.

## **5. Acknowledgements**

The review team members would like to express their appreciation and gratitude to the Government leaders, community members and health workers who supported them during the review. The participation and support of Dr Yin Dakui, Vice Minister of Health, Dr Wang Zhao, Director General, Department of Disease Control, Dr Wang Ke-An, President of the Chinese Academy of Preventive Medicine, and Dr Yu Jingjin, Director, EPI Division, is also gratefully acknowledged.

may99revsumrep/25may99

# **LIST OF PARTICIPANTS, CHINA EPI REVIEW, 10- 25 MAY 1999**

Dr Y. Chiba, JICA	Qinghai
Dr Lu Lin, Yunnan EPS	(Xining)
Dr Ding Zengrong	
Dr Steve Cochi, CDC	Jiangsu
Dr Zhu Xu, CAPM	(Nanjing)
Dr Ling Luoja, Zhejiang EPS	
Dr Osman Mansoor, WHO	Chongqing
Dr Chai Feng, CAPM	(Chongqing)
Dr Jeff McFarland, CDC	Guizhou
Dr Chu Jingkui, CAPM	(Guiyang)
Ms Carla Lee, CDC	Heilongjiang
Dr Dong Shengli, UNICEF	(Harbin)
Dr Zhang Xinglu, CAPM	
Mr Tony Burton, WHO	Hunan
Dr Yang Zhiwei, CAPM	(Changsha)
Dr Liu Qinglian, Sichuan EPS	
Dr K. Hikita, JICA	Guangdong
Dr Xu Tianqiang, Shanghai EPS	(Guangzhou)
Mr Gregory Sam , WHO	Inner Mongolia
Dr Dai Zhenwei, Anhui EPS	(Hohhot)
Dr Shen Yonggang, Anhui EPS	
Mr John Pott, WHO	Shanxi
Dr Cheng Feng, Hubei EPS	(Taiyuan)
Dr Sigi Roesel, WHO	Jiangxi
Dr Zhao Shili, Shandong EPS	(Nanchang)
Dr Sun Liangying, Hainan EPS	
Ms Maryanne Neill, WHO	Tianjin
Dr Wang Lixia, CAPM	(Tianjin)
Dr Sun Meiping, Beijing EPS	
Dr Lisa Lee, WHO	Guangxi
Dr Wang Xiaojun, CAPM	(Nanning)
Dr Zhou Yong, Fujian EPS	
Dr Yoshi. Sato, WHO	Jilin
Dr Zhang Rongzhen, CAPM	(Changchun)
Dr Merdan, Xinjiang EPS	

Mr Alan Schnur, WHO	Shaanxi
Dr Ze Wenyuan, BJ Biologicals Inst.	(Xian)
Dr Feng Zijian, Henan EPS	

Dr Jessie Wing, CDC	Ningxia
Dr Bai Yu, Liaoning EPS	(Yinchuan)

**REVIEW OF EPI AND POLIO ERADICATION, CHINA, 10-25 MAY 1999  
VISIT TO SHAANXI PROVINCE, 11 TO 21 MAY 1999**

Dr Feng Zijian, Director EPI, Henan Province EPS  
Dr Ze Wenyuan, Epidemiologist, National Vaccine & Serum Institute  
Mr Alan Schnur, WHO Technical Officer

## **1. INTRODUCTION**

### **1.1. Background information:**

- Shaanxi Province
  - Population: 35,010,749 (1998)
  - Area: 206,000 km<sup>2</sup>
  - Provincial Birth Rate: 9.97/1,000 (1998) (12.99/1,000 in 1997)
  - Prefectures and Cities: 11 (1998)
  - Counties: 106 (1998)
  - Townships: 2,886
  - Administrative villages: 34,617
  - Average annual income: Y.1,285 (rural) in 1997 ranks 22/31. (Y. 3,672 – urban in 1997)
- Province AFP rate in 1998: 1.94/100,000 (see attached table)
- Routine EPI Coverage Report in 1998: 11 of 11 prefectures and 106 of 106 counties reported.
- Shaanxi is included in the World Bank Health Project No 7 on EPI (WB7).

### **1.2. Places visited and presentation of findings:**

Province, 2 prefectures, 2 counties, 3 townships, 3 villages, 5 hospitals (see attached list)

Presentation of findings and recommendations on 21 May 1999 to:

Mr Chen Jiazhen, Dy. Secretary General, Shaanxi provincial government

Dr Liu Aimei, Director Provincial Health Bureau, member standing committee Shaanxi Province  
Political Consultative Conference.

## **2. FINDINGS AND ISSUES**

### **2.1. Government support and funding**

1. Extra funds were provided to cover the increased costs of vaccines in 1997 and 1998, but funding for operational expenses was not sufficient to cover all costs.
2. Shortages of funds were found for EPI operations at lower levels.
3. No funds provided by government for safe injections; replacement of injection equipment is responsibility of village doctor.
4. The Finance Departments at several levels have not yet provided counterpart funds and/or guarantees for the WB7 project.
5. Funds for cold chain equipment have not been provided and most equipment seen was old, provided by UNICEF in the 1980s was seen.
6. Replacement plans for cold chain and safe injections equipment provided under WB7 have not yet been prepared.
7. In one prefecture, lower levels, down to village level are being charged handling and logistics fees for standard EPI vaccines provided free by the provincial government. These charges are passed on to the parents of the children immunized.
8. Funds provided by governments at each level were not sufficient for EPI operations, particularly training and supervision.
9. The team met government leaders at all the facilities visited

## 2.2. Routine Immunization, including hepatitis B

1. All areas visited had at least 6 rounds per year. It was reported that at least 6 routine EPI rounds per year are carried out in all counties.
2. Reported EPI coverage is >90% from the routine EPI reporting system. However reports from several prefectures were incorrectly filled in and analysis of reported data using estimated target populations showed coverage of 50% to 60% in some areas. Reported birth rates of 5 to 7 per 1,000 population in many areas are unbelievably low.
3. Analysis of data from the routine EPI reporting system in one prefecture identified two counties with very low estimated coverage. One of these counties happened to be the one selected by the team and many problems were found in implementation of EPI in the county. This reflects the usefulness of the routine EPI reporting system for detecting management problems.
4. Data entry errors were detected on reporting forms reviewed at facilities visited indicating that staff did not give high enough priority and attention to the reporting system and forms.
5. In one of the counties visited training on the new routine reporting form had not yet been done and hepatitis B (HBV) immunization data was not yet submitted in the two reports for 1999.
6. One township, reporting only 121 BCG in 1998 instead of the expected number of 139, advised that since the last round was in early November 1998, they would not include children born after the round in November and December 1998 in the target population. These children born after the last round were also not included in the target in 1999.
7. Analysis of routine EPI reports from lower levels were not being done at any facility visited. Major errors in the reporting forms of one prefecture visited were included in the provincial report without comment or request for clarification to the prefecture. While all 106 counties submitted routine EPI coverage reporting forms for 1998, data were not always timely.
8. One county visited did not report any hepatitis B data to the prefecture, yet the prefecture included hepatitis B data from that county in its first period report for 1999.
9. A survey of 7 children less than 4 years (including one set of twins) in one village showed that all 4 of the children where the mother was available to respond reported having received HBV, even though the village doctor's register showed that none of the children had received HBV. One of the mothers reported that the village doctor had given her child the HBV. Of the 7 children interviewed, 2 had reportedly just arrived in the village from Xian, where their mother lived. The grandparents who were watching the children refused to answer questions about the immunization status of the children. The village doctor in this village reported that he would immunize any children from outside the village requiring immunization, but not count the numbers in the reports.
10. MOH needs to issue guidelines to the provinces on analysis and use of the routine EPI data and prepare a computer programme for analysis of data by prefecture.
11. The main Hepatitis B immunization focus appears to be on selling more vaccine and making a profit rather than in providing community protection against hepatitis B infection. Cold chain is also not always given proper attention. HBV is the responsibility of several departments in the provincial EPS. In effect, no unit has the responsibility for monitoring HBV immunization and trying to increase coverage. The main emphasis of hepatitis B immunization should be to use the public health aspects of the vaccine to reduce the number of new infections of hepatitis B and the carrier rate.
12. Due to market conditions, hepatitis B vaccine (HBV) is procured from many sources at each level rather than only from the EPS. This appears to result in some lower level staff not reporting HBV immunizations because they would need to explain the source of their vaccine.
13. A plan has been prepared to provide Hepatitis B vaccine at a subsidized price of Yuan 4 for 3 doses per child in 50 counties under the World Bank Health Project No. 7.
14. MOH needs to urgently issue detailed guidelines on hepatitis B control, including immunization, to the provinces. The guidelines should focus on the public health aspects of HBV and cover centralization of the management of all aspects of hepatitis B under the EPI section (as MOH has done) and improved vaccine procurement and management, including maintaining of cold chain for HBV.

### 2.3. SNIDs

1. 6 province-wide NIDs/SNIDs have been carried out since 1993 reportedly with high coverage of >90%.
2. Xian reported additional immunization sites and mobile teams to cover the floating population during the 1998/1999 SNID. A coverage survey was carried out in each township of the city, following the SNID showing 99.7% coverage for the first round and 100% coverage for the second round; however teams carried OPV and immunized children not previously immunized and then counted the child as immunized during the SNID.
3. OPV vaccine supply was sufficient for the SNID.

### 2.4. Safe injections

1. Safe injections is a major problem in Shaanxi, both for EPI and for curative injections.
2. The majority of EPI injections are done with the one glass syringe for each vaccine and only changing the needle. Staff interviewed at village level thought that this practice was acceptable.
3. Village doctors are currently responsible for procurement for procurement of syringes and needles for safe injections
4. About 50% of the steam sterilizers (about 8,000) provided under the World Bank Health Project 7 arrived in late 1998 and have been distributed. Steam sterilizers in the places visited were being used correctly.
5. In one prefecture visited, the syringes and needles provided under WB7 had not yet been distributed. In the other prefecture, syringes and needles were distributed to all villages resulting in those with sterilizers receiving only half the recommended number of syringes and needles.
6. The provincial level must follow up on distribution of syringes and needles to ensure that sufficient quantities are provided so that there are not enough to follow the one sterile syringe-one sterile needle-one injection policy)
7. In areas visited using disposable syringes there are were no plans to ensure non-reuse and safe disposal of used syringes. The provincial EPS has not issued any guidelines on this topic.
8. Long term planning and funding is required to replace used syringe and needles after the WB7 provided equipment starts to wear out and break in two to three years.
9. It is the responsibility of the government to provide sufficient funds to assure safe EPI injections.

### 2.5. Disease Surveillance

1. There are still problems with sensitivity and specificity of AFP surveillance as shown by unreported AFP cases detected in 2 hospitals during active search.
2. Closer cooperation and collaboration with hospital staff on AFP surveillance is required.
3. The AFP cases reviewed appeared to be true AFP cases.
4. 71% of AFP cases in 1998 had 2 adequate stools collected reportedly due to late arrival of AFP cases at health facilities.
5. The 60-day follow-up visit rate within 75 days is only 61%, but it was reported that even if done late, all cases were followed up.
6. The Provincial Expert AFP classification panel meets three times per year (twice in 1998 and once so far in 1999) and reportedly has revisited cases. Reports were available on the deliberations and results of meetings held.
7. While outpatient departments of the hospitals visited were reportedly involved in AFP surveillance, it was not clear if they were being visited during active surveillance visits.
8. AFP posters were seen on the walls of most, but not, all of the relevant departments of hospitals visited
9. NT surveillance had started in the province, with 11 cases investigated in 1999. Sharing of data and collaboration with the MCH section was adequate.
10. 706 measles cases had been reported in 1999, but the data could not be reviewed because provincial staff were not familiar with the Foxbase programme used and could not combine the separate data bases for the three months.
11. Sending of data to CAPM, Beijing was done regularly and was not reported as a problem.

## **2.6. Cold chain and Vaccine handling and management**

1. Problems with shortages of BCG were observed in all places visited due to interruption of supply from the manufacturer in Shaanxi.
2. Large quantities of vaccines (>10,000 doses) of expired vaccines (measles, BCG, DPT) were found at one prefecture and one county visited. Short expiry date vaccine provided by Lanzhou Biologicals Institute did not appear to be a problem.
3. At one township visited, only 3, 7 and 5 ampoules of BCG, DPT and measles respectively were being provided for each round, which was insufficient to cover the 14 immunization sites in the township.
4. A provincial vaccine supply plan was prepared, but vaccine requests and requirements did not appear to be scrutinized by the next higher level.
5. None of the facilities visited were keeping a running stock balance of how many doses of vaccine were in stock at the time of visit.
6. Vaccine handling was a problem: (a) vaccine carriers were reported to be provided with only 2 icepacks; (b) in winter time, vaccines are carried without cold chain.
7. Equipment shortages and old equipment were found in most places visited. The WB7 equipment is anxiously awaited.
8. Two of the three compressors on the two provincial -20o C cold rooms were broken and the third compressor was still under test after being repaired. 5 compressors were received from Beijing, but could not be installed by local technicians.
9. The WB7 project will meet many of the equipment shortages, but the actual situation will need to be reviewed after equipment is provided.

## **3. MAJOR RECOMMENDATIONS**

### **3.1. Government support and Funding**

1. To continue the benefits of EPI, the Governments at each level must take responsibility for the quality of EPI services, including assuring safe injections and replacement plans for cold chain equipment. Sufficient funds for training and supervision need to be provided to maintain the quality of services.

### **3.2. Routine EPI immunization, including hepatitis B**

2. MOH needs to issue guidelines to the provinces on analysis and use of the routine EPI data and prepare a computer programme for analysis of data by prefecture.
3. MOH should urgently issue detailed guidelines on hepatitis B control, including immunization, to the provinces. The guidelines should focus on the public health aspects of HBV and cover centralization of the management of all aspects of hepatitis B under the EPI section (as MOH has done) and improved vaccine procurement and management, including maintaining of cold chain for HBV.

### **3.3. Disease surveillance**

1. Improved coordination between the EPS and hospital staff are required in Shaanxi province.
2. Formats for analysis of measles and NT data need to be urgently provided. Training on Foxbase is also required.

### **3.4. SNIDs**

1. SNIDs will only be required in floating population and low coverage areas for the next winter season. All efforts need to be placed on ensuring high coverage in these difficult to cover areas.



### **3.5. Safe Injections**

1. Safe injections for EPI and routine curative injections needs urgent attention. Equipment provided by World Bank Project No. 7 needs to be distributed in sufficient quantities to assure safe injections can be maintained, but only AFTER practical, hands-on training of staff at all levels.
2. The government must assume responsibility for adequate funding and support to ensure that 100% safe EPI injections can be achieved and sustained.

### **3.6. Cold chain management**

1. Vaccine stock management needs urgent improvement with stock registers to monitor stocks of vaccine, and expired vaccine, maintained at each place where vaccine is stored.
2. Training on cold chain is required so that all vaccines are always stored under correct cold chain.
3. WB7 equipment needs to be urgently supplied.

## **4. ACKNOWLEDGEMENTS**

The support of the health staff and government leaders who met the team at all places visited is gratefully acknowledged, especially Mr Chen Jiazhen and Dr Liu Aimei, who took time from their busy schedules to receive the final report of the team. Special appreciation is expressed to the provincial staff who accompanied the team on all or part of the field visits.

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## **Shanxi Province Review, 10-25 MAY 1999**

### **Review of Expanded Programme on Immunization (EPI) and Polio Eradication in China**

**Review Team: Mr. John B POTT, World Health Organization, Beijing, China  
Dr. CHENG Feng, Department of EPI, Hubei Anti-epidemic Station, China**

#### **Executive Summary**

Shanxi is a mountainous province situated in north central China with in 1998 a population of 31,722,000 in 11 prefectures/cities and 119 counties. The principal wealth of the province is coal and minerals and it is one of the poorest provinces in China.

Since the May 1998 review substantial improvements in all areas have been achieved. This province is one of the few that have produced their own regulations for EPI management, safe injections and Polio, measles and Neonatal Tetanus surveillance. The routine EPI reporting system has been started in all prefectures in the beginning of 1999, in 1998 AFP all the indicators reached WHO standards. In this province 60% of EPI immunizations are with disposable syringes.

#### **Problems and Recommendations**

##### **Funding**

All EPI vaccine in this province is funded by the provincial government and half-price hepatitis B vaccines is provided for poor counties by World Bank Health VII loan. But there are serious funding shortages for EPI activities and cold chain maintenance.

##### **Recommendation:**

The Province should include a budget for EPI activities and cold chain maintenance.  
The local EPS's should be encouraged to raise funds at local level.

##### **Routine Immunization**

The routine immunization has a very high coverage for polio, measles, and BCG in the regular reporting system and by the review calculation but the coverage for DPT and hepatitis B is very low by the review key indicators, 55% and 50% respectively.

A reporting system of routine immunization is operating effectively in whole province. However, even at provincial and prefecture level, the coverage data was not analyzed and used for identifying areas with low coverage.

##### **Recommendation:**

The ministry of Public Health in Beijing should provide a special training course of routine immunization coverage data analysis for provincial level.  
The province should use the data available to identifying areas with low coverage.

##### **Safe Injection Practices**

**This province uses 60% disposable syringes in the EPI programme.**

The province produced a guideline for safe injection. However, the management for disposable syringes is not clearly described in the guidance and implies that disposable syringes are safe.

##### **Recommendations:**

That revised regulations be introduced to ensure destruction of disposable syringes to prevent re-enter into the health system.

##### **Cold Chain:**

Cold chain system is nearing collapse due to the age of equipment and in many places there is

insufficient storage capacity. This means that at province and prefecture level, measles vaccines is being stored at +4°C. At provincial level, they have had to borrow a refrigerator truck. At prefecture level, there is no refrigerator transportation.

Recommendation:

Cold chain equipment provided by World Bank Health VII loan should be implemented as soon as possible.

### **Training**

The training is doing very well in 1998 in this province. In different levels, the training courses were well planned, prepared and recorded.

### **Surveillance**

This province now conducts surveillance for AFP, measles and neonatal tetanus. In general, the indicators for surveillance quality have been reached national standards. But during a hospital visit, 2 unreported AFP cases were found in the Department of Case Records.

Recommendation

Staff in EPSs and hospitals who are in charged of AFP reporting should go and check every department regularly and review actively the various registers.

### **Immunization Records**

In both poor and rich areas visited, the immunization cards are kept in township hospitals correctly and cover more than 90% of the children. Immunization certification books were kept with the family and the immunization coverage rate was said to have been reached 80% by village doctors.

## **EPI /Polio Eradication Review in Qinghai Province**

**11-21 May 1999**

Review Team: Din Song Rong MD, Yunnan Provincial EPS, Li Yi Xing MD, CAPM,  
Yasuo Chiba MD, JICA Project

### **1. Background**

Qinghai province is located in the northwest of China and consisted of 8 prefectures or 47 counties. Its land area is 720,000 square kilometers with desert area and mountains occupying more than 80% of land. A total population is 5.0 million of which more than a half belongs to minor tribes such as Tibetan, Hui, Tu, Salar, Mongolian and Kazak. Population aged <15 years is approximately 1.4 million.

Ten counties of the province were assigned to project areas for neonatal tetanus (NNT) elimination by UNICEF. The World Bank project for EPI, "W7", has not been introduced into this province. Outlines of places where our team visited are described in Annexed 1.

### **2. Finding and Recommendations**

#### **(1) Political-financial support**

A total budget for EPI was rather limited even at provincial level (620,000 to 630,000 RMB/year) and little increase was seen in its allocation since 1996 (total change, 0.7-2.3%). Prefectures and counties did not have annual EPI budget. Expenditures, 5,000-9,000 RMB/year, in Huangnan prefecture (low income) and 0-40,000 Yuan in Haidong prefecture (high income) were paid partially by the prefecture government as temporal expenses. The most of expenditures of counties, 15,400 to 29,800 RMB (low income), and 108,500 to 126,000 RMB (high income) from 1996, were paid by county EPS itself or has been left as debts.

There was no shortage of EPI vaccines in the whole province but unchanged vaccine funding, 380,000 RMB/year, since 1996, has left some debts to vaccine producers. This year province allocated 570,000 RMB (50% increase) for paying the debts and procurement of enough vaccines to meet annual need.

#### **Recommendations**

- allocate regular EPI budget in prefecture and county based on planed annual activities,
- increase provincial vaccine funding, particularly for purchasing hepatitis B vaccines,
- pay special consideration and support to promote EPI in this province because of higher costs of vaccination per person,
- secure enough number of EPI staff, particularly of county, even after administrative restructuring

#### **(2) Routine vaccination service**

Except for hepatitis B vaccine, distribution of the 4 basic EPI vaccines seemed to cover well whole target population at county level since 1996. Although 16/47 counties (34%) conducted less than 6 rounds of vaccination in 1998, both the townships visited conducted 6 rounds of vaccination from 1996. Vaccination coverage of children 12-23 months was

excellent in both villages except for hepatitis B vaccine. Distribution of this vaccine is still 10% or less of necessary doses for the whole target population in the province.

Township and village health workers did not have plausible evidences or data to exclude existence of population that may often be out of EPI services such as children born out of family planning or of floating families.

Township or village health workers have been given very small amount of subsidiary for their duty on vaccination activity. In low income county, 40-60 RMB was paid monthly for workers in farming area or 12-18 RMB in agricultural area. No such subsidiary was given to workers in high income areas. EPI insurance, which once introduced in 1988, was not conducted widely nor promoted in this province in recent years.

#### Recommendations

- promote hepatitis B vaccination to be incorporated widely into the routine EPI even in rural areas,
- secure early registration of newborn infants to start routine vaccination timely,
- complete EPI registration to provide vaccination services even to those of floating families or born out of family planning,
- develop an appropriate policy to subsidize health workers at grass-roots including introduction of EPI insurance scheme,

### **(3) Supplemental immunization (SNID)**

OPV coverage was not decreasing in 1997/98 SNID compared to in 1996/97 SNID in 2 townships visited. Of the 2 counties visited, Huang zhong county was excluded from 1998/99 SNID and vaccination was conducted in only 5/26 townships. No data were available for the coverage of floating children or "0 dose" infants in both townships. At county level, 48-95% of "0 dose" infants in 1997/98 SNID was aged less than one year old. This may indicate either that enumeration of SNID target population was incomplete or that EPI registration is delayed in many infants after birth.

#### Recommendations

- guide appropriately for determining SNID target at provincial or lower level,
- support politically next SNID focussing on high-risk areas with continuous funding,
- identify and register children in floating families or infants with OPV low coverage,
- develop and enforce tactics to immunize high-risk population in next SNID,

### **(4) Safe injection**

Province distributed a steam sterilizer, a number of glass syringes and needles to 1080 immunization posts (villages). This supply was supported by Australian government and by NNT elimination program of UNICEF. However, sterilization of equipment in boiling water is a common method employed in rural areas. Provincial EPS estimated that in 90% of vaccination posts exchange of a needle for different children is the only one practice for safe immunization injection.

**Annex 1. Outlines of places visited by this review team**

	Population	Administrative sub-units	Terrain	Hospitals visited and number of beds
Qing Hai Province	5,028,000	8 prefectures		Provincial hospital for women and children, 390 beds
Huang Nan Prefecture	194,610	4 counties	Mountains	prefecture hospital, 150 beds
Jian Zha County	44,559	10 townships		County hospitals, 60 beds
Duo Jia Township	2,100	9 villages		
La Fu Dan Village	169	4 natural villages		
Hai Dong Prefecture	2,130,000	8 counties	Hills	prefecture hospital, 150 beds
Huang Zhong County	449,379	26 townships		County hospitals, 180 beds
Po Jia Township	8,913	8 villages		
Gan He Village	1946	8 natural village		

Supply of glass syringes and needles also did not seem to be enough. In one immunization post of a county assigned to NTT elimination project, number of syringes was less than maximum number of children vaccinated in a single immunization session. Health worker's knowledge about necessity of safe immunization injection was not satisfactory in a number of vaccination posts.

#### Recommendations

- develop a comprehensive strategy for achieving safe injection in province,
- encourage to fund enough number of safe injection equipment to immunization posts,
- ensure to include safe injection issues into any EPI training courses from provincial to grass roots level,
- strengthen publicity for safe injection

#### **(5) Disease surveillance and reporting of routine coverage**

New forms for reporting of routine vaccination coverage were not used at any administrative level of this province. Twenty-seven of 47 counties (57%) did not report routine coverage 4 times in 1998 as requested.

Quality of AFP surveillance was variable depending upon areas and hospitals. Four of the 8 prefectures did not achieve 2 representative surveillance indicators, i.e., one case of AFP /100,000 children and specimens collection rate of >80% of AFP cases. Non of the 3 AFP cases found in 4 hospitals reviewed had been reported to county EPS in 1998. Similarly, 3 of 5 measles cases were not reported to the EPS. Except for AFP, little training courses had been conducted below prefecture level for reporting cases of NTT or measles.

#### Recommendations

- promote reporting of vaccination coverage together with use of new reporting forms,
- encourage county EPS to conduct active surveillance at appropriate intervals for detecting cases of AFP, NTT and measles,
- improve coordination between hospitals and county EPS for the EPI diseases reporting,
- arrange special training courses for both EPS and hospital staff for strengthening reporting of NTT and measles

#### **(6) Cold chain**

Cold chain equipment is generally old in everywhere the team visited. Maintenance and repair have often been hindered by the lack of parts. Townships visited lacked a refrigerator, restricting the townships to conduct vaccination in a regular schedule. Province mentioned that vehicles in many county EPS for vaccine transportation and surveillance were introduced in the 1980's and close to its maximum durability.

#### Recommendations

- prepare long term plans for maintenance and replacement of cold chain equipment,
- promote domestic and international support for supplying cold chain equipment,
- provide refrigerators in township hygienic stations

# NEONATAL TETANUS ELIMINATION AND SAFE INJECTIONS, 4 PROVINCES, CHINA, HIGH RISK COUNTIES AND EXPECTED FUNDING SOURCES, 1999

Province	NUMBER OF COUNTIES								
	Total High Risk Safe inj.	Total High Risk NTE	UNICEF	WB 7		AUSAID #1	JICA	Uncovered for NTE	Uncovered for safe inj.
				NTE	Safe Inj.				
Inn. Mongolia	100	36	6			3	26	27	91
Gansu	86	44	2	15	86			27	0
Qinghai	48	29	10			13		12	31
Ningxia	24	7	9			7		0	15
TOTAL	258	116	27	15	86	23	26	66	137

**Notes:**

WB 7 = World Bank Health Project #7 (EPI)

AusAID = Australian Agency for International Development

Overlap between AusAID #1 and UNICEF Projects: Qinghai=6, Ningxia=7

JICA project will provide cold chain equipment to flood-affected areas  
(safe injections equipment still to be confirmed)

03-Feb-99



**COLD CHAIN AND SAFE INJECTIONS, CHINA  
FUNDING SOURCES, 1999**

COLD CHAIN AND SAFE INJECTIONS SUPPORT, BY AGENCY, 1999										
Province	Province Covered (No. of counties)									
	Total Counties	UNICEF	WB 7	JICA	AUSAID #1	SIDA	Luxembourg	Prov. HB	WHO	Uncovered
11 Beijing								X		
12 Tianjin								X		
13 Hebei			X							
14 Shanxi			X							
15 Inn. Mongolia		X(p)		X(p)	X(p)					X(p)
21 Liaoning										X
22 Jilin				X(p)						X(p)
23 Heilongjiang				X(p)						X(p)
31 Shanghai								X		
32 Jiangsu								X		
33 Zhejiang								X		
34 Anhui				X(p)						X(p)
35 Fujian								X		
36 Jiangxi				X(p)		X(p)				X(p)
37 Shandong								X		
41 Henan			X							
42 Hubei			✓	X(p)						
43 Hunan				X(p)		X(p)				X(p)
44 Guangdong								X		
45 Guangxi			X							
46 Hainan		X								
51 Sichuan				✓						X
52 Guizhou			X							
53 Yunnan			X							
54 Tibet							X			
55 Chongqing										X
61 Shaanxi			X							
62 Gansu		X(p)	X							X(p)
63 Qinghai		X(p)			X(p)					X(p)
64 Ningxia		X(p)			X(p)					X(p)
65 Xinjiang			X							
<b>TOTAL</b>		5	10	7	4	2	1	8	0	3
<b>Note:</b> X(p) = Partially covered province or partial funding support still required										
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