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Kazakhstan**

Gary R. Gleason and Torgeldy Sharmanov

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Forging Effective Strategies to Combat Iron Deficiency

Anemia Prevention and Control in Four Central Asian Republics and Kazakhstan^{1,2}

Gary R. Gleason^{*3} and Torgeldy Sharmanov[†]

^{*}*Iron Deficiency Project Advisory Service (IDPAS), Medford, MA 02155; and* [†]*Nutrition Institute of Kazakhstan, Almaty, 480008 Kazakhstan*

ABSTRACT Kazakhstan and the central Asian republics of Uzbekistan, the Kyrgyz Republic, Tajikistan and Turkmenistan have developed anemia prevention and control (APC) policies based on multiple interventions, including education and promotion, oral supplementation of high risk groups and fortification of wheat flour with iron and other micronutrients. These national strategies are aimed at reducing the prevalence of anemia and iron deficiency among young children and women of child-bearing age. Strategy development has been assisted by funding and technical assistance from the United Nations Children's Fund (UNICEF) with additional technical support from the International Nutrition Foundation, the United Nations University and various national institutions. These countries have been among the most advanced in adopting national strategies that include multiple interventions in an overall package, and national interest in APC remains high. However, reviews of APC activities conducted in 2001 suggests the need for modification and enhancement of current efforts and for a shift to national-level actions if these countries are to progress toward current and future goals. Increased commitment and determination, by both national groups and international organizations, are required to achieve and sustain improvement in micronutrient nutrition. *J. Nutr.* 132: 867S–870S, 2002.

KEY WORDS: • iron deficiency • anemia prevention and control • CARK

This article describes anemia prevention and control (APC)⁴ strategies, and recommendations for actions and program support, in the central Asian republics of Uzbekistan, the Kyrgyz Republic, Tajikistan and Turkmenistan, and in Kazakhstan. Collectively, these countries are often referred to as the “CARK” countries. They share a common APC strategy, developed in collaboration with United Nations Children's Fund (UNICEF), based on multiple interventions that include education and promotion aimed at improving iron nutrition, oral supplementation of high risk groups and fortification of wheat flour with iron and other micronutrients. National strategies and commitments to APC have been discussed internationally and jointly among the CARK countries, beginning in 1994. These discussions and follow-up

actions have led to several studies of micronutrient prevalence and various trial interventions.

National strategy development

With support from UNICEF, each of the CARK countries set up a national strategy to reduce the prevalence of anemia and iron deficiency among young children and among women of child-bearing age (Fig. 1). Funding and technical assistance for implementation of these APC strategies was provided by UNICEF, and included additional technical support from the International Nutrition Foundation, the United Nations University and various national institutions. These APC strategies, based on the internationally accepted model of multiple interventions, are serving as the basis for APC activities in each CARK country (Fig. 2). The interventions include the following: 1) fortification of wheat flour with iron and other micronutrients; 2) preventive oral supplementation of high risk groups with iron and folate; 3) promotion of improved and diversified diets; 4) control of infection (helminthes and malaria); 5) linkage of anemia control efforts to related public health services; and 6) explicit inclusion of supportive strategies of communication, monitoring and research

As planned with UNICEF, the interventions required for APC are being introduced and developed in phases (Fig. 3). With the exception of Turkmenistan, which has begun wheat flour fortification, the emphasis in each of these countries since 1997 has been on efforts to develop effective models for providing preventive supplementation to major

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³ To whom correspondence should be addressed: IDPAS, 126 Curtis St., Medford, MA 02155. E-mail: ggleason@inffoundation.org

⁴ Abbreviations used: APC, anemia prevention and control; CARK, collectively, Asian republics of Uzbekistan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Kazakhstan; UNICEF, United Nations International Children's Fund.

1993:	Nutrition Institute of Kazakhstan (NIK) study finds negative changes in national diet 1988 to 1992
1994:	Internationally funded study and iron supplementation interventions trial in Uzbekistan find maternal anemia prevalence >50% and substantial problems with daily iron supplementation. (Cross Link International)
1995:	CARK Nutrition Action Plan outlining multiintervention strategy to prevent iron deficiency endorsed by nutrition specialists of all CARK countries Kyrgyz fortified 185 metric tons of wheat flour with FeSO ₄ + KIO ₃ (USAID/Mercy Corps/UNICEF) Nutrition Action Plan for CARK (NIK, WHO/ UNDP/ UNU/ UNICEF)
1996:	Demographic Health Survey finds high levels of anemia in women and children in Kazakhstan. Demographic Health Survey finds high levels of anemia in women and children in Uzbekistan CARK Interparliamentarian Union and UNICEF declare anemia prevalence in the area a "crisis" and agree to new national actions.
1997:	Efficacy research study on weekly iron+ folate supplementation in Kyzylorda, Kazakhstan by of Kazakhstan Institute of Nutrition Demographic Health Survey finds high levels of anemia in women and children in Kyrgyz Republic
1997-98:	CARK APC Strategy developed, endorsed at UNACC/SCN and accepted in each country. UNICEF begins support for supplementation and education activities in one oblast of each CARK country.
	<ul style="list-style-type: none"> Preventive supplementation: of all women of reproductive age (60 mg FeSO₄ + 0.4 mg folic acid/wk); all pregnant women (120 mg FeSO₄ + 0.8 mg folic acid/wk); all children 6-12 mo (30 mg FeSO₄ syrup/wk; and all children 12-24 mo (60 mg FeSO₄ + 0.4 mg folic acid/wk) Treatment as per national protocols Education for compliance and better iron nutrition
1999:	CIDA supplies 12-mo supply of supplements for oblasts projects in five countries. CARK Maternal and Child Health Forum calls for renewed emphasis on APC.
2000:	Turkmenistan begins fortifying wheat flour with FeSO ₄ supplied through UNICEF assistance. New DHS Survey includes hemoglobin tests in a subsample of men showing that iron deficiency is the major cause of anemia in that country.
2001:	Oblast level supplementation and education projects reviewed in all five countries leading to recommendations for national APC actions. Asian Development Bank request proposals for assistance to begin fortification of 30% of wheat flour in four of the five CARK countries.

FIGURE 1 Development of anemia prevention and control (APC) strategies in Asian republics of Uzbekistan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Kazakhstan.

risk groups. Beginning in 1998 to 1999, activities have been concentrated in projects in one oblast⁵ in each country. As of mid-2001, the majority of work on APC in these countries was focused on increasing oral supplementation as a preventive measure for women of childbearing age and children 6 to 24 mo of age. These efforts were reviewed in 2001 in each country. In four of the five countries, these activities were also associated with the development of project proposals seeking grant support from the Asian Development Bank to initiate wheat flour fortification.

CARK countries have been among the most advanced in adopting national strategies that include multiple interventions in an overall package, and national interest in APC remains high. However, reviews of APC activities conducted in 2001 revealed several weaknesses in recent efforts and some erosion in UNICEF support. These reviews also indicated that current activities must be revitalized and shifts made toward national level actions if these countries are to progress toward current and future goals. New APC targets may be set on the basis of agreements to be reached at the United Nations General Assembly Special Session on Children that is expected to take place in the first half of 2002.⁶ At this session, leaders of CARK countries are expected to join other heads of state and governments in adopting a set of global commitments outlined in an outcome document entitled "A World Fit for Children." It is anticipated that this document will be

⁵ An administrative area used throughout many former Soviet Union countries that is equivalent to a province or state.

⁶ At the United Nations General Assembly Special Session on Children in 2002, leaders of CARK countries are expected to join other heads of state and governments in a set of global commitments outlined in the session's outcome document, "A World Fit for Children." Included in this document is a call for anemia prevalence to be reduced by 30% in each country by 2010. During preparations for the UNGA Special Session, there was a high level of international support for including a target on reducing anemia prevalence from government delegations, nutrition specialists and researchers in the United Nations and international donor agencies, bilateral development assistance organizations and major NGO. Many who supported this work stressed that anemia prevention and control are a clear matter of human rights for children, youth and women.

a call for anemia prevalence to be reduced by 30% in each country by 2010, and that these new targets will be subsequently adopted or adapted by each of these countries. It is noteworthy that during preparations for the UN General Assembly Special Session, there was a high level of international support for including a target on reducing anemia prevalence. Expressions of support came from government delegations, nutrition specialists and researchers in the United Nations and international donor agencies, bilateral development assistance organizations and major nongovernment organizations. Many who supported this work stressed that anemia prevention and control are a clear matter of human rights for children, youth and women.

Countries in central Asia should have a step up on many others in meeting APC goals based on the strategic foundation and activities of the past several years. However, new commitments and actions are warranted if the CARK countries are to achieve a 2010 target of a 30% reduction in the prevalence of anemia. For success to be achieved, collaboration on APC with UNICEF and other sources of support will have to be refocused and strengthened. Stronger external support should be feasible in light of the UNICEF emphasis on supporting programs in these countries that focus on interventions across the full life cycle of children and women. Additional planning, advocacy and explicit organizational commitments must occur for these countries to obtain resources required to develop and build sustainable interventions and an overall system to prevent and control anemia. Information from the recent APC progress reviews and recent information on factors related to the effectiveness of APC activities, as well as constraints, should be helpful in making new plans and modifying existing strategies. The reviews of APC activities carried out in each of the five countries in 2001 indicate the continued validity of the "package of interventions" outlined in the CARK APC strategies. However, these reviews, which were based on protocol reviews, interviews and focus groups among providers and clients and direct observations of services, also found that considerable additional work is required to ensure effectiveness at the oblast level with supplementation and education efforts and to develop project characteristics that will be sustainable as these activities spread nationwide (Fig. 4).

Further progress on APC, especially concerning the introduction of wheat flour fortification, will depend on the effec-



FIGURE 2 Major interventions required for anemia prevention and control.

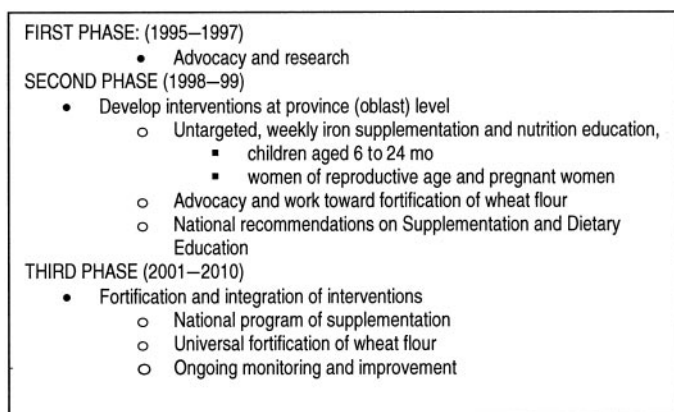


FIGURE 3 Phased strategy for anemia prevention and control in Central Asia.

tive use of information from the APC reviews and from experience in other countries, indicating the need for new alliances and greater multisector collaboration. These alliances are different for each APC intervention. Leaders and staff from sectors including health, education, local government, the media and employers have to be involved for supplementation and dietary education to be effective. Leaders and organizations associated with the milling industry, bakers and trade sector must actively participate in introducing wheat flour fortification. It is important that these and other groups participate in developing technical and delivery aspects of the main interventions and assist in generating demand and changes in practices among the citizenry and consumers.

Supplementation of high risk groups

For the supplementation of high risk groups, the APC oblast level reviews identified the need for current dosage protocols to be changed to ensure that pregnant women receive needed iron. The reviews also found a need for new supplement forms and compositions with additional micronutrients, fewer side effects and greater ease of use and safety for young children. The reviews revealed the need to improve the organization of community participation and models and explore mechanisms for family payment for supplements. New activities are required that include wider participation by media and communication professionals in promoting diets that improve iron nutrition. Implementing these activities will require additional resources and planning. In some of these countries, particularly Tajikistan, APC will also be improved by bringing together health, education and community level groups to improve the linkage of APC activities with other public health programs that aim toward controlling parasites, malaria and other infections that cause anemia. In support of these national efforts, donors including UNICEF, the European Union, the United Nations Family Planning Agency and the World Food Program and others must reconsider their cooperation, recognizing the challenge and resources required to expand and improve current approaches and to introduce new ones that expand preventive supplementation.

Fortification of wheat flour

Introduction of wheat flour fortification is a major component of the APC strategy that gained significant new external

support in 2001. The practice was first introduced at the mill level in Central Asia in Kyrgyz Republic in 1995 through support from the United States Agency for International Development (USAID), Mercy Corps and UNICEF. In 1996, the President of Turkmenistan issued an order requiring all flour to be fortified with iron. However, despite UNICEF support, the introduction of this practice began only on a limited basis in 2000. In 2001, specifications were developed by the Nutrition Institute of Kazakhstan for a multimicronutrient enrichment mix for wheat flour, adapted to regional diets and nutritional needs.

After the offer of grant funds from the Asian Development Bank, four CARK countries developed plans for wheat flour fortification. These new resources for wheat flour fortification are also a catalyst that can be useful in boosting the overall APC programs of these countries. In terms of external support for the overall APC strategy, UNICEF assistance continues to be important in terms of assistance with supplement supplies, development and production of education/promotion materials, and development of national capacities for communication support and advocacy. These communication efforts are directed toward the new national alliances and other international groups whose participation and support are necessary for APC.

Technical assistance needs

In 2001, four CARK countries requested that UNICEF provide the additional technical assistance required to clarify national plans in relation to each of the APC interventions. Assistance is needed to clarify how these interventions can be introduced in phases, and integrated during the coming decade. By mid-2001, clarification of UNICEF commitment to support APC activities in CARK had become urgent because supplies of supplements required to continue Oblast level

<p>Areas covered:</p> <ul style="list-style-type: none"> • Knowledge of anemia, signs, causes, consequences • Training process and effectiveness • Supplement supplies (pregnant, nonpregnant and pediatric) • Supplement distribution (pregnant, nonpregnant and pediatric) • Compliance (pregnant, nonpregnant and pediatric) • Side effects (pregnant nonpregnant and pediatric) • Information, Education, Counseling • Messages and materials • Channels and channel preference • Continuity of IEC • Costs models and potential for family purchase of supplements • Program management and use of monitoring • Opinions on fortification of wheat flour • Opinions on national recommendations <p>Key Findings</p> <ul style="list-style-type: none"> • Previous knowledge of anemia much lower than expected; major gains in knowledge over past 2 y • Training chain weakened substantially toward periphery, finally emphasizing distribution and compliance • Supplement supplies generally adequate at all levels • Supplement distribution generally adequate, often overdone • Compliance: highest for children, lowest for nonpregnant — dependent on health workers in rural areas • Side effects: few major reported effect, many mentioned in focus groups — no systematic response
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FIGURE 4 Summary of findings from 2001 oblast level anemia prevention and control (APC) activity reviews in Asian republics of Uzbekistan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Kazakhstan.

activities and to expand them were becoming exhausted. In each country, during the 2001 APC reviews, government officials requested, at minimum, support to continue and in most cases expand APC oblast activities. Not only supply assistance was required. The reviews also showed that communication work and staff orientation in support of APC activities at the oblast level were required to improve the effectiveness of supplementation compliance and to explore family level dietary practices related to iron nutrition. Other organizations, specializing in micronutrients could also help, such as the Program Against Micronutrient Malnutrition, the Micronutrient Initiative and the Iron Deficiency Project Advisory Service of the International Nutrition Foundation. However, the well-established leadership role of UNICEF in terms of external support for the overall strategy for APC gives that organization an important coordinating and advocacy role that is likely to continue and be critical for some time.

Recommendations for future work in the CARK countries appear to have been accepted in principle in UNICEF offices

in these counties and in discussions with government officials and senior staff at major nutrition research institutions. Such principles should be reflected in concrete actions in the months and years ahead.

Discussions with national officials and various surveys and reviews in the CARK countries indicate progress in preventing and controlling anemia in women and young children. The technical skills required to accelerate APC work are available nationally for the most part; new sources of financial support for wheat flour fortification and some other activities have become available through the Asian Development Bank. These sources of support are important, but do not guarantee that any of these countries will achieve the decade objective set to reduce the prevalence of anemia by 30% by 2010. Greater priority and better focus on APC continues to be warranted. Increased commitment and determination, both by national groups and by international organizations, are necessary to improve micronutrient nutrition and ensure that children and women are not denied their basic human rights.