Chapter 8. TREATMENT AND PROPHYLAXIS OF IONISING RADIATION IMPACT NEURO-PSYCHIATRIC CONSEQUENCES

Prophylaxis, management and rehabilitation issues in patients suffering psychoneurological disorders risen under radiation impact or in remote period are extremely actual. No common concept of their correction and prophylaxis is available up-to-date.

ARS and CRS management principles were elaborated rather completely [Guskova A.K. et al., 1964; Guskova A.K., Bajsogolov G.D., 1971; Guskova A.K. et al., 1988 etc.]. However as was noted by L.A. Ilyin (1994) no CRS pathogenetic therapy was found and radiation injuries management problems remain unsolved. To the whole extent that is also relevant to the radiation sickness neuropsychiatric manifestations management.

Standard approach in patients suffering *intracranial radiation-induced necrotic injuries* provides neurosurgery. However the *corticosteroid therapy* is of both adjuvant (in surgery) and independent role in some forms of central nervous system radiation damage [Gutin P.H., 1991].

Corticosteroids can extremely effect the patients clinical status in *brain radiation necrosis*, reducing the brain swelling and elevated intracranial pressure [Martins A. et al., 1979; Edwards M., Wilson C., 1980]. Early in-time and intensive treatment of the swelling that is considered as one of demyelination causes in remote period is definitive arrangement in neurological deficiency genesis prevention. With this purpose the *Dexametason* is applied most often due to its high activity and low mineralocorticoid effect. Steroid therapy long-term application that in some cases can be required for radiation necroses management may lead to complications rise as gastrointestinal bleeding, tolerance to glucose lowering, immunosuppression, weight gain etc. Because of prolonged corticosteroid therapy side effects the attempts were applied for brain radiation necroses management with another medications. Among them the *non-steroid anti-inflammatory* preparations (Ibuprofene & Indometacine), *anticoagulants* (Heparin & Varfarin) were tested both with *non-glucocorticoid 21-aminosteroids* group suppressing lipid peroxidation in central nervous system and in particular — preparation U74006F dramatically reducing iron-dependent lipid peroxidation and therefore producing pronounced protective effect on brain [Gutin P.H., 1991].

In connection with Chernobyl disaster the huge tidal wave of every sort and kind «wonder-working» remedies and methods appeared being as a rule of panacea character where among all the other the ability of «radiation driving out» from organism nearly always was declared and therefore — of «Chernobyl disease» healing. Unfortunately up to the present time the formal medicine remains on the ambivalent position (more correctly — on its absence) regarding mentioned remedies and methods. That is why we devoted the present chapter to those prophylactic, curative & rehabilitation arrangements description that according to our experience occurred effective in aid providing to the survivors suffering neuro-mental disorders.

Mental health protection problem is one of the leading if not the prior position among the Chernobyl disaster survivors. The stated problem extreme actuality is defined by the progressing alterations presence in them on all the three main levels of psychic function organisation:

- social;
- personal;
- cerebral.

To understand the essence of required rehabilitation arrangements every of these level disorders are to be characterised in brief.

Social level. Subjection to damage on this level was stipulated in survivors by the Chernobyl disaster in combination with further collapse of social-political system. The last one both with material crisis led to the crisis spiritual. As the result the «unwarranted future» syndrome and «temporal space subjective compression» phenomenon were formed in survivors that was described by several authors. That phenomenon is presented with survivors occurred in so-called «social time trouble» [Salamatov V.A., 1990 - 1992]. Realisation of genesis risk regarding unfavourable and probably lethal consequences of radiation disease in them in combination with country social-political and economical situation unpredictability lead to the perception of time lack for traditional social-domestic problems solving i.e. making families, bringing up children, help to the old parents, family home development etc. In addition to the mentioned above, the values system change and distortion took place in society. So if in soviet times the nuclear industry was covered with mystery, romanticism and social importance, than in our time the attitude is more watchful-negative. Respectively the survivors including firemen social role is moved from heroism and courage category to the concept of sacrifice. The so-called «victimisation» of survivors is taking place. The social vulnerability and uselessness complex forming becomes those and other social shifts result leading to the progressing social disadaptation.

Personal level. Our study results indicate the survivors personality alterations presence. Those alterations can be interpreted as personality pathological evolution variants with both radiation and non-radiation (mainly psychogenic) factors involvement in genesis [Naprejenko A.K., Loganovsky K.N., 1995–2001]. In such cases the «marginal» psychopathy forming in registered with its progress dynamic directly depending upon psychic activity social and cerebral organisation levels state.

Cerebral level. Level is characterised with psychoneurological disorders continuous progress with clinically shaped psycho-organic disorders forming in remote period. Somatic sphere is defined with multiform visceropathy forming.

Though it is obvious that social, personal and cerebral organisation levels alterations of psychical activity in survivors is the single whole i.e. the «closed psychosomatic circle». The extreme difficulty of causal–consequence relationship evaluation is the named circle pathophysiological peculiarity as the causes and consequences are permanently trading places there with aftermath obtaining the pathogenic factor nature.

Presentation of neuro-mental activity alterations in Chernobyl disaster survivors using the 3-level model is of principal importance as substantiates the continuity and «triune integrity» necessity in psycho-correction and rehabilitation arrangements execution. In other words the only solely medicaments treatment efforts are doomed on fail without social issues solution in survivors both as the social privileges can not preserve and recover the mental health. Our 15-years experience in medical-social aid providing to the Chernobyl disaster survivors is the basis for so explicit statements.

Social rehabilitation. At present the stable ability to work loss probably is the single more or less effective social guarantee. In majority of patients the intention to receive the disability formal status is defined with social protection reception necessity, first of all — of its material aspect. In occurred situation there is more profit to be recognised ill but not healthy. Harm of the stated situation (stipulated by law system imperfection) is obvious: along with constantly rising social burden to the state the psychosomatic pathology redoubling takes place with passive personal position forming and «victim complex» maintaining.

Both with that one can not agree with opinion expressed soon after the Chernobyl disaster by L.A. Ilyin & A.K.Guskova and some other authors regarding «egalitarianism» in social privileges providing to all the survivors categories. Medical staff role remaining the leading one in survivors *individualised* social rehabilitation can be stated the whole certainty. This statement is based upon the experience of extremely flexible and effective social work with persons survived after A-bombings in Hiroshima and Nagasaki [Matsumoto Y.S., 1969; Mine M. et al., 1991, 1992] both with our own experience in the field of medical-social activities among the Chernobyl accident survivors.

Social measures (arrangements - translator note*) system* is to cover the following principal directions:

- medical supplementation;
- providing jobs with training and qualification changes availability;
- social privileges;
- material supplementation (support);
- involvement to the civil activity.

Medical supplementation is free and is to include:

1. Patronage at home
2. Dispancerisation (clinical examination for the prevention and treatment of disease) in out-patient setting 1–2 times a year
3. In-wards examination and management in the leading specialised clinics yearly
4. Medical-social review
5. Sanatorium/health resort treatment
6. Complete dentistry aid
7. Required medications supplementation

Providing jobs with training and qualification changes availability is to be of key role in survivors social rehabilitation system. Health state disorders both with changed needs in professions in society can require change of professional activity type. Employment form with flexible working schedule through the day and week is the most preferable one especially with working at home availability. Work in extreme emotional-psychic and physical load conditions in contra-indicated both with that in unfavourable climate-meteorological conditions, transport facilities driving, work on high etc.

From the social-personality re-adaptation point of view the creative seed presence in new job is optimal that with enable person to self-realise and self-actualise. One of the variants of such patients working re-adaptation is mastering or quality improvement in the field of computer technologies and work in scientific-research or scientific-industrial institutes and organisations of various property forms. Successful social rehabilitation of some survivors who chose the described above life strategy proves its expediency. Worth to underline that personality reserves optimal application in rational job placement is the cornerstone both in social rehabilitation and mental health preservation in a whole.

Additional financial support of working (but not disabled) patients through for example the definite coefficient to the salary could be the important issue of working life strategy choice but not orientated on disability in these patients of workable age. Both the state social insurance system and non-state foundations and organisations could be such financial support sources. Medical-social effect of such protectionism regarding patients employment from the side of state and public institutions is obvious: at any rate the «conditional profitability» of life strategy orientated on disability would lose its sense and such patients contingent involvement in labour activity would stipulate successful social re-adaptation and their mental health preservation.

Social privileges of survivors are stated in legislation currently in force in Ukraine. Obviously the privileges extent is correspondent to the state economical development. Free medical aid with protectionism in the field of occupational orientation and employment providing are principal issues here.

Material supplementation is also in direct dependence on country economic state. Guaranteed life-long pension providing of patients suffered radiation sickness regardless their labour activity is to be however obligate. Japanese experience can be the stated problem solution example where several dozens various allowances (pensions) to atomic bombings survivors are available being individually provided from state and public institutions. Such well-considered social policy effectiveness in Japan is reflected at least with the fact that life duration in atomic bombings survivors exceeded that in Japanese population in a whole (where it is among highest in the world) [Mine M. et al., 1991, 1992].

Involvement to the civil activity is aimed to oppose the passive social-personal position and «victim complex». As it is shown by experience such persons participation in legislative projects elaboration regarding the Chernobyl disaster survivors, work in different foundations, public organisations etc. can be the most optimal forms of such activity. Necessity of providing the survivor possibility of own social importance and usefulness perception is principal both with recognition that he is not a victim of tragic events but human that accomplished courageous and heroic action being able for that in the future too. At that the most valuable here is the position forming with recognition that not only surrounding world impacts the human but he himself well to the small extent still can effect the world and modify it.

Stated approach to social work with survivors can provide the effective social re-adaptation. At present just rehabilitation social issues in such patients are of leading role in their health preservation and mental one in particular.

Personality alterations correction. Personality level disorders are in the close link to the social and cerebral levels state. In these both levels pronounced alterations the personality disorders correction is extremely complicated. In any case, the *psychotherapy* is the main method of personality disorders correction.

Only in psychopathic or psychopathic-type disorders decompensation the medication correction is expediency. In such cases under the asthenic circle disorders (apathetic-abulic, apathetic-asthenic symptomatic) the Sulpirid prescribing is indicated in doses of 100–200 mg daily, antidepressants of activation type (SSRIs), adaptogens (Tincture Ginsengi, Eleuterococci, Araliae Manshuricae etc.). Under the hypersthenic circle disorders (explosive, disphoric symptomatic) the sedative and tranquilizing remedies (Seduxen), neuroleptics (Neuleptil, Trisedil, Sonapax), antidepressants of sedative type (Ludiomil, Maprotilin, Doxepin, Amitriptilin etc.) application is indicated both with Carbamazepine (Finlepsin, Tegretol) in doses 5–10 mg/kg daily.

Worth to note that even under the psychopharmacological remedies prescription the psychotherapy remains its decisive role in personality disorders correction. As our experience indicated the rational individualised psychotherapy conduction is most expedient aiming the disease adequate internal pattern and setting on active (working) life strategy forming in patient by means of common sense. Undoubtedly the family disharmonies correction is of substantial role in psychotherapy work.

The so-called «treatment with travelling» is one of psychotherapy impact types justified for these patients contingent. This method is known for long time and acceptable for Chernobyl disaster survivors because firstly, the new impressions and surrounding change in travel stipulate the apathetic disorders correction (described in old times as «hypochondria») being central point in social disadaptation. Secondly, rest during travelling contains the sanatorium/health resorts elements (talassotherapy, climate therapy, balneotherapy etc.), however worth to remark that voyages to the countries with hot end humid climate for such patients are not allowed in summer but indicated in autumn period. Thirdly, seafood products, fruits, vegetables, natural vines consumption also provides undoubted healing effect, stipulating mental health preservation and maintenance. In «travelling therapy» conduction the individual family tours are preferable compared to group voyages where the Chernobyl disaster survivors are in content. In the last case the psychotherapeutic effect can occur even negative due to communication with survivors providing repeated experiencing of occurred events, reviving in memory dramatic events related to disaster i.e. in another words supporting and accentuating personality alterations stipulated by disaster experience.

Psychic self-regulation exercises complex mastering is the personality re-adaptation important component in survivors [Napreyenko A.K., Petrov K.A., 1995]. Both Western and Eastern psychotherapy and physical training achievements are included in the complex (auto-training, meditation, breath gymnastics, yoga etc.). Psychic self-regulation complex application in this contingent results not only in proper therapeutic effect of physical exercises themselves but is also aimed on personality alterations self-correction through self-knowledge, self-development and self-perfection.

Cerebral level disorders correction of psychic activity in survivors is held in according to the principles worked out by A.I. Nyagu et al. (1991–2001). *Complexity, stage nature and continuity* between stages (clinic, ambulatory/out-patient clinic, ambulatory, sanatorium/health resort) are the management main principles.

In the management very early stages just after respective conditions appear under combined external and internal irradiation, the arrangements application is indicated being designed for radionuclides absorption decrease and elimination intensification. Arrangements are presented with stomach wash, bowels cleaning, prescribing of vomiting, purgative (salt type preferable) medications and diuretics (saluretics, osmotic diuretics) both with decorporants i.e. radioactive materials eliminators and absorption blocking remedies. Entero- and hemosorption, complex-forming medications application is expedient.

Already one day later after intoxication the radioactive materials are as a rule firmly fixed in deposition sites and their elimination from organism becomes more and more difficult. Blood decontamination by means of ion-exchanging facilities, blood replacement fluids of detoxication type (Hemodez, Rheomacrodex, Rheopolyglukin etc.), hemodialysis, plasmapheresis and hemosorption is of high importance in early period.

In remote period of ionising radiation impact and incorporated radionuclides deposition the *disintoxication therapy* importance remains actual. Detoxication therapy is aimed at toxic metabolic products elimination that are produced in organism both due to biochemical and biophysical processes radiation-induced alterations on molecular and cellular levels and chronic exposure to incorporated radionuclides.

Definite sides of nervous system both radiation and non-radiation injuries pathogenesis are taken into account as basic ones for the cerebral level disorders correction. Specific endotoxic syndrome is found in Chernobyl accident survivors. Thereby *detoxication therapy* is of primary role in ionising radiation impact on nervous system. In-time application of remedies decreasing general irradiation effects and radionuclides organ-tropic impact after their incorporation through respiration and digestive organs can occur not only the therapy arrangement but radiation psychoneurological pathology secondary prophylaxis important component.

At the same time the entero- and haemosorption application effectiveness in this period remains disputable. The sorption methods adherents insist on the detoxication and radio-eliminating activity of sorbents and also on their enough curative efficacy in very different radiation and non-radiation pathology. However no works were found in available scientific literature presenting the correctly conducted study results regarding sorbents efficiency in incorporated radionuclides elimination both with psycho-neurological disorders correction. Besides that, observed by us in clinic sorption therapy complications (digestive system disorders, haemothorax etc.) indicate necessity of careful approach in such methods application. Not challenging the sorption therapy effectiveness in radiation injury early stages, we consider the method application expedient in remote period requires further research aiming indications and contra-indications elaboration.

Intravenous infusions of Hemodez, low-molecular dextrans (Rheopolyglucin, Rheomacrodex, Polyglucin etc.), sodium chloride isotonic solution or glucose 5% solution with vitamins C & B, diuretics (Lasix, Mannit, Mannitolum, urea pura) combination have shown themselves in a good way as disintoxication therapy. Therapeutic plasmapheresis application is effective for detoxication and intracellular metabolism improvement.

Membrane protectors (Essentiale, Lipostabil, Liv-52 etc.) and *medications modulating tissue metabolism* (Solcoseril, Actovegin, Splenin, Plasmol, Rumalon etc.) application required for metabolic disorders correction and cellular membranes protection is the part of neuropsychiatric manifestations pathogenetic therapy in survivors. The so-called *long time elevating radioresistance remedies* [Kuna P., 1989] decrease radiation effects and elevate organism general resistance. Majority of them through the action pathway are classified as antioxidants i.e. free-radical oxidation processes inhibitors: Tincturae Ginsengi, Eleuterococci, Echinopanacis , Araliae Manshuricae; Tocoferolum, Citric, Ascorbic and Glutamic Acids; carotinoids, Lecytin, Vitamin P etc.

Brain metabolism normalisation and hypoxia relief are important in treatment course. The best *vasoactive-nootropic* drug for liquidators is Sermion (Nicergoline) [Nyagu et al., 1999; Loganovsky K.N., Yuryev K.L. (Eds.)., 2001]. High dosages of Sermion (30–60 mg per day) neuropsychiatric efficacy for encephalopathy monotherapy in irradiated patients were studied. Open randomised with parallel groups clinical trial was carryied out for an assessment of neuropsychiatric efficacy of monotherapy by high dosages of sermion (30–60 mg per day) in 57 liquidators at the age of 33–65 years irradiated by 50–900 mGy with organic mental disorders (encephalopathy) occurred following cleaning up works in the Chernobyl exclusion zone in 1986–1987. Sermion 30 mg per day took 23 patients (group A), sermion 60 mg per day — 16 (group B), 18 patients were treated by a complex of vasoactive-nootropic drugs (comparison group). Clinical neurological, psychiatric (using the SANS and BPRS) and neuropsychological (Rey Auditory Verbal Learning Test, RAVLT) examinations and quantitative electroencephalography were used. Group A was examined at the beginning, at the 21st and 60th days of treatment, group B and comparison group — at the beginning and at the 21st day of treatment. Headache, vertigo, hypothermia of extremities distal parts, fatigue, coordination and balance disorders and increased systolic blood pressure were the target symptoms of sermion. It has been established that 30–60 mg per day of sermion provides vasoactive, nootropic, autonomic nervous system stabilising, neuroprotective and psychotropic actions. Sermion 60 mg per day provided the maximal nootropic effect. Sermion monotherapy was effective for correction of vestibular-atactic and autonomic disorders, sensoric-algetic and muscle-tonic symptoms, as well as some of negative psychopathology, hypochondriac and anxiety-depressive symptoms. The lateralised right-hemispheric frontal pattern of the brain activation related to the dosage of sermion has been revealed for the first time. It was concluded that monotherapy of encephalopathy in irradiated patients by high dosages of sermion (30–60 mg per day) provides a high neuropsychiatric efficacy which is higher than that as a result of a complex vasoactive-nootropic treatment. Sermion 60 mg per day provides more rapid neuropsychiatric effect. Sermion high doses are well tolerated by patients and quite safe. According to the obtained resuls sermion 30–60 mg per day may be recommended for the treatment of patients with organic mental disorders (encephalopathy) exposed to ionising radiation [Nyagu et al., 1999; Loganovsky K.N., Yuryev K.L. (Eds.)., 2001].

The *nootropic medications and angioprotectors* are also applied: Nootropil (Piracetam), Aminalon, Gammalon, Piriditol (Encephabolum), Lipocerebrin, Cerebrolysin, Fenibut, Pantogam, Acefen etc. that stimulate oxidation/reduction processes, intensify glucose utilization, elevate energetic potential and brain tissue resistance in hypoxia and intoxication, provide metabolic products elimination from brain.

Cerebral and peripheral hemodynamics improve is in close connection with brain metabolism normalization and provides vasoactive medications & angioprotectors prescribing. Instenon is the complex preparation of vasoactive-nootropic action. Positive vascular-nootropic effect of phytopreparation Tanakan (Ginkgobil) was marked in the last decade. Brain circulation is selectively improved by Cinnarisin (Stugeron). It also reduces reaction on biogenic vasoconstrictive agents, has antihistaminic activity, decrease vestibular apparatus irritability and sympathetic-corticotonia. In cerebral vagospastic states and brain circulation insufficiency manifestations the preparations of

Vinca erecta alcaloids (Devincan, Cavinton, Vincaton) are effective. Inclusion of remedies improving peripheral and cerebral circulation (Papaverin, No-spanum, Halidor, Sermion, Dibazol, Euphyllinum, Nihexin, Nicospanum, Xantinoli nikotinas, Trental, Prodectin, Parmidin, Prizma), elevating venous vessels tone, decreasing capillary permeability and not altering electrolyte balance (Escusan, Venoruton, Dipyridamol, Aspirin, Euphyllinum, Veroshpiron, Secale cornutum alcaloids and their derivates preparations etc.) is expedient in therapy complex.

Discirculation encephalopathy management is directed on venous congestion relief (Euphyllinum, Escusan, Troxevasin, Venoruton), diuretics prescribing is also proposed both with antioxidants of direct (Alpha-tocopherol acetate 5% 1.0 mL, Ascorutinum) and indirect action (Glutamic acid), antihypoxants, nootropic medications, Cerebrolysimun both with remedies improving microcirculation i.e. Rheopolyglukin, Rheomacrodex (3 - 6 intravenous infusions per course), antisclerotic medications (Diosconin, Polysconin, Miscleron, Minetol), cardiotonics (Cordiaminum, heart glycosides). *Cephalgia* is successfully relieved by combination of Analgin 0.2, Amidopyrine 0.2, Phenacetine 0.2, Coffeinum-natrii benzoas 0.03 and Luminalum 0.01. In *vestibular disorders* the Vitamin B_6, Stugeron, Cavinton, Bellathaminalum, Bromcamphora (0.25–0.5 2–3 times a day), Platifilline, Phenobabitalum, compositions by Osipov and Soldatov prescribing is recommended.

Especial attention is to be paid to the *autonomous nervous system disorders* correction. Nervous system sub-segment parts normalisation is reached through application of tranquilizers with sedation effect (Relanium, Seduxen, Rogypnol, Meprobomatum, Passit, Nosepam, Posaden etc.) and antidepressants (Amitriptillinum, Melipraminum, Anafranilum, Ludiomil, Mutabon etc.). Medications depressing the diencephalic and limbic-reticular brain structures excessive irritability are to be used in therapy complex: Pyrroxan, Butirroxan, Belloid, Bellathaminal, Bellaspon, Finlepsin, Tegretol, Diphenin. Management of peripheral progressing vegetative insufficiency provides application of medications depressing the β-adrenergic structures reception (Anaprilinum, Obzidanum, Inderal, Trasicor, Vicsen). Pharmacological therapy in autonomous nervous system disorders various types among persons exposed to ionising radiation impact is of own peculiarities depending on the vascular-vegetative syndrome direction.

In *neurocirculation dystonia* (NCD) the angioprotectors application (Cavintonum, Stugeron, Prodectinum, Sermion, Prizma etc.) is selectively indicated for patients in average-therapeutic doses after meals for 1.5–2 months 1–2 times a year. In venous hypertension the diuretics are indicated (Uregit, Furosemid, Diacarb, Triampur, Veroshpiron etc.) within day first half before meals. Rarely in case of pronounced alterations in arterial/venous equilibrium the single-time blood-letting conduction is available (100–150 mL of blood) with further intravenous drop infusion of 10,000 U heparin and Rheopolyglucinum (Rheomacrodex). Venous dyscirculation decrease is reached by means leeches application on mastoid processes. In further support therapy the Trental or Curantil 1 tablet 2 times after meals daily is indicated in these persons for 4–6 weeks.

In *NCD hypertonic type* the mild sedative remedies application is recommended (composition of Vallerianae, Leonuri and Sodium bromide) both with tranquilizers (Trioxazinum, Elenium), spasmolytic, hypotensive and cholinolytic (Belloid, Bellaspon, Bellathaminalum) medications.

In NCD *hypotonic type* the medications of stimulating action prescribing is advisable (Tincture Ginsengi, Eleuterococci, Echinopanacis, Araliae Manshuricae, Coffeinum, Duplex, Saparal, Pantocrin, Sydnocarb, Sydnofen) both with anabolic steroids (Retabolil 5%, 1 mL I/M weekly — 3–4 weeks; Potassium orotate, ATP, Aloe, Cocarboxylase). In case of stable symptoms complex with as a rule brain reticular formation activity depression in its basis, the Carbamazepine (Finlepsin, Tegretol) prescribing in low or intermediate doses is recommended. Physical training, swimming, thermal-contrast and circulatory curative showering, undergoing a mud cure; ozocerite, paraffin baths, applique works and acupuncture efficacy was shown.

NCD cardiac type requires besides the sedative therapy with tranquilizers prescribing of the soft calming phytogenic remedies (Tincturae Ginsengi, Motherwort, Hawthorn, Adonis, Lily of the valley) in combination with Sodium bromide, Codeine, Validol, Menthol, barbiturates etc. Under cardiac syndrome severe progress on NCD background the β-adrenolytics application is recommended (Cordanum) and calcium antagonists (Finoptin, Isoptin, Corynfar, Cordafen, Nifedipin etc.). Favorable effect is observed under daily drip-feed of glucose-insulin-potassium mixture (i.e. Labori cocktail) for 7–10 days.

In *NCD of mixed type* the stated above remedies application is recommended with dominating clinical symptomatic taking into account.

Upper and lower extremities *angiotrophoneurosis* (Raynaud's syndrome) requires the nicotinic acid preparations prescribing for 2–3 weeks in highest doses (Nicotinic acid, Complamin, Theonicol, Nicospanum, Nicoverinum etc.), drip-feed of 100–150 mL 0.25% Novocaine solution (5–10 in series). Angioprotectors and Solcoseril & Actovegin prescribing is effective (per 10 mL on salt solution). In stable pain syndrome the basic therapy combination is available with blood serum laser irradiation (8–10 procedures), lotion applications with emulsion of 10–20% Dimexide & Heparin (5,000 - 10,000 IU on painful zones for 10 - 16 hours). Physiotherapy includes the Gangleron ionophoresis on vegetative ganglions zone, general sulfuric baths, four cell baths, therapeutic mud applique on legs and spine. Patients suffering such pathology are entirely prohibited for smoking, surrogate alcohol drinks consumption, stay in cold, work under electromagnetic fields, radiation and vibration impact.

Basic therapy of the *vegetative-vascular dystonia* (VVD) consists in vegetotropic, nootropic and vasoactive medications prescribing. Psycho-vegetative disorders correction is attained by means of medications prescription suppressing excessive irritability of brain diencephalic and limbic-reticular structures, stimulating reticular formation activity; antidepressants. Adrenolytics and cholinolytics are indicated for segment-peripheral vegetative structures normalization. Stated preparations are used in average-therapeutic doses for prolonged terms (not less than 1.5–2

months) 1–2 times a year. VVD basic therapy is added with spasmolytics, analgetics, hypotensive remedies, adaptogens prescribing both with physiotherapy, acupuncture, psychotherapy.

Paroxysmal stated management is of particular concern. In *sympathetic-adrenal crisis* the following protocol is prescribed in series: Euphyllin (2.4% solution) — 10 mL, Glucose (20% soluton) — 40 mL I/V in flow, Pentamine (15% solution) 1 mL I/V drip-feed; Clofellin (0.01% solution) — 1 mL, Lasix 80 mg (4 mL) I/M. In tachyarrhythmia the Propranololum (Obzidan or Inderal per 5 mg I/V in salt solution) and Anaprilin (60– 80 mg per os daily) are indicated. Sometimes the α-adrenolytic Clofellin is prescribed (I/M per 0.1 mg every 1–2 hours up to maximum daily dose 0.4–0.6 mg). In face, larynx, tongue and extremities swelling the calcium preparations, ephedrinum and diuretics are to be applied. Supporting course management includes Suprastin 0.025 in noon and Seduxen (0.01) with Pyrroxan (0.015) before night for 4–6 months, medical glycerin per 50 mL for glass of fruit juice once a day after meals for month, following diet restricted for salt, weekly bowels wash.

Management of *vago-insular crises* includes: the pain neuro-vascular (Analgin 50% solution — 2 mL, Cyanocobalamin 0.5–1 mg, No-spanum 2 mL or selectively — Baralgin, Trigan, Maxigan 5–10 mL, Lasix 40 mg (2 mL) I/M) and vestibular-vegetative syndromes (Atropine sulphate 0.1% — 1 mL, Dimedrolum 1% — 1 mL or Seduxen 0.5% — 1 mL). Crisis can be relieved through the drip-feed of ex tempore prepared Sodium bicarbonate 5% solution per 100–150 mL every other day, 0.25% Novocaine solution — 100 mL.

Mixed crises management consists in vegeto-stabilizing preparations individual symptomatic selection. In the combined crises interictal period the α-adrenolytic Pirroxan (0.015 after meals), in the evening — vagotropic preparation Butirroxan (0.015) are recommended. Elenium, Seduxen, Sibazon, Relanium, Ergotamine, Fenobarbital, Difenin, Finlepsin, Tegretol prescribing is expedient for paroxysmal states management. Crisis states therapy is to be individual, executed on the basic management background and held regularly and enduringly. Therapy complex can be withdrawn only under preparations intolerance or crises absence for 6–12 months. Crises management is to be combined (two or more preparations in low or average-therapy doses).

Mental disorders correction is held on syndromologic level. In specialized psychiatric aid providing to survivors all the extent of medication therapy, psychotherapy, reflex-therapy and other remedies/arrangements is applied. A.K. Napreyenko & K.N. Loganovsky (1995–2001) proposed the pharmacotherapy protocol enabling the management maintenance through principle of preparations successful combinations search under the most frequently met psychopathologic syndromes of expression various extent among the described patients cohort (table 8.1).

Table 8.1

PHARMACOLOGICAL PREPARATIONS APPLICATION FOR PSYCHIATRIC DISORDERS CORRECTIONS IN CHERNOBYL NPP ACCIDENT SURVIVORS
[A.K. Naprejenko, K.N. Loganovsky, 1995]

Psychopathological state	Preparation, single (daily) dose, g (or other)	
	In disorder moderate manifestations	In disorder severe manifestations
1	2	3
Anxious-hypochondriac & depressive-hypochondriac	Trioxazin 0.3–0.9 (0.6–1.2) Nozepam 0.01–0.03 (0.03–0.09) Sibazon 0.005–0.015 (0.015–0.045) Asaphen 0.025–0.075 (0.05–0.15) Saparal 0.05 (0.15) Acephen 0.1 (0.3–0.4) Mebicar 0.3–0.9 (0.6–1.8)	Eglonil 0.2–0.6 (0.4–1.2) Amitriptilin 0.025–0.05 (0.075–0.3) Melipramin 0.025–0.075 (0.05–0.3) Pyrizidol 0.025–0.075 (0.075–0.4) Sydnocarb 0.005–0.01 (0.075–0.15) Doxepin 0.025–0.05 (0.15–0.3) Mianserin 0.025–0.05 (0.15–0.3)
Asthenic (cerebrasthenic)	Tinctura Araliae Manshuricae 30–40 (60–120) drops Tinctura Echinopanacis 30–40 (60–120) drops Tinctura Ginsengi 15–20 (45–75) drops Saparal 0.05 (0.15) Acefen 0.1 (0.3–0.4) Scutellariae baicalensis Georgii 1–2 (4–6) dragees	The same + Sydnophen 0.005 (0.005–0.08) Tanakan (Ginkgobil) 1.0 (3.0) Actovegin 2 mL (5 mL) Cerebrolysin 1.0 (5.0) mL Korinfar (hifedipin) 0.01–0.03 (up to 0.12)

Asthenic-depressive	The same + Asaphen 0.025–0.075 (0.05–0.15) Indopan 0.005–0.01 (0.005–0.04)	The same + Doxepin 0.025–0.05 (0.15–0.3) Ludiomil 0.025–0.05 (0.15–0.2)
Obsessive-fobic	Trioxazin 0.3–0.9 (0.6–1.2) Sibazon 0.005–0.015 (0.015–0.045) Fenazepam 0.0005–0.0015 (0.005–0.015) Asaphen 0.025–0.075 (0.05–0.15)	Seduxen 0.02–0.04 (0.06–0.12) Chlorprotixen 0.025–0.05 (0.075–0.6) Carbidin 0.025–0.05 (0.075–0.15) Amytriptilin 0.025–0.05 (0.075–0.3) Teralen 0.05–0.2 (0.2–0.4) Leponex 0.05–0.2 (0.2–0.4) Sonapax 0.01–0.025 (0.03–0.075)
Hypervalued ideas (affective thinking decompensated form)	Chlozepid 0.005–0.01 (0.02–0.03) Meprobomat 0.2–0.4 (2.0–3.0) Seduxen 0.02–0.04 (0.06–0.12) Fenazepam 0.0005–0.0015 (0.005–0.015)	Chlorprotixen 0.025–0.05 (0.075–0.6) Aminazin 0.025–0.05 (0.075–0.6)
Hysteric manifestations with conversion sensory and locomotive phenomenons	Teralen 0.05–0.2 (0.2–0.4) Sonapax 0.01–0.025 (0.03–0.075) Neuleptil 0.01–0.02 (0.04–0.07) Aminazin 0.025–0.05 (0.075–0.6)	The same
Psychopathic (psychopathic-type) ***of depression circle*** ***of irritative circle***	Sibazon 0.005–0.01 (0.01 –0.03) Nozepam 0.005–0.01 (0.03–0.05) Grandaxin 0.05–0.1 (0.1–0.2) Fenibut 0.25–0.75 (0.75–1.5) Fenasepam 0.0005–0.0015 (0.005–0.015) Trioxazin 0.3–0.9 (0.6–1.2) Sibazon 0.005–0.015 (0.015–0.045) Nozepam 0.005–0.01 (0.03–0.09) Grandaxin 0.05–0.1 (0.1–0.2) Fenibut 0.25–0.75 (0.75–1.5) Fenazepam 0.0005–0.0015 (0.005–0.015)	Neuleptil 0.01–0.02 (0.04–0.07) Sonapax 0.01–0.025 (0.03–0.075) Eglonil 0.2–0.6 (0.4–1.2) Nuredal 0.025–0.05 (0.05–0.35) Frenolon 0.005–0.02 (0.01–0.06) Neuleptil 0.01–0.02 (0.04–0.07) Sonapax 0.01–0.025 (0.03–0.075) Chlorprotixen 0.025–0.05 (0.075–0.6) Tizercyn 0.025–0.05 (0.1–0.3) Lithium carbonate 0.3–0.6 (0.9–1.5)

Intellectual-mnestic disorders (dementia, Korsakoff's syndrome)	Nootropyl 0.4–0.8 (1.2–2.4) Encephabol 0.1–0.3 (0.2–0.6) Aminalon 0.25–0.5 (0.75–3.0) Glutamic acid 0.25 (0.75) Korinfar (Nifedipin) 0.01–0.03 (up to 0.12) Fitinum 0.25–0.5 (0.75–1.5) Acephen 0.1 (0.3–0.4)	The same + Actovegin 2 mL (10 mL) Cerebrolysin 5 mL (20 mL) Tanakan (Ginkgobil) 1 mL (3–6 mL) Scutellariae baicalensis Georgii 1–2 (4–6) dragees
Convulsive and non-convulsive paroxysms (psychic equivalents)	Sibazon 0.005–0.015 (0.015–0.045) Pantogam 0.5–1.0 (1.5–3.0) Magnesium Sulphate 25%–10 mL Phenobarbital 0.05–0.3 (0.05–0.6)	Difenin 0.1–0.3 (0.1–0.9) Finlepsin 0.2–0.4 (0.4–1.2) Depakin 0.3–0.45 (0.9–2.4)
Asthenic-abulic (hypobulic)	Saparal 0.05 Acefen 0.1 (0.3–0.4) Nootropyl 0.4–0.8 (1.2–2.4) Encephabol 0.1–0.3 (0.2–0.6) Glutamic acid 0.25 (0.75) Fitinum 0.25–0.5 (0.75–1.5) Tinctura Araliae Manshuricae 30–40 (60–120) drops Tinctura Echinopanacis 30–40 (60–120) drops Indopan 0.005–0.01 (0.005–0.04)	The same + Sydnocarb 0.005–0.01 (0.075–0.15) Sydnophen 0.005 (0.005–0.8) Actovegin 2 mL (10 mL) Tanakan (Ginkgobil)–1 mL (3.0–6.0) Eglonil 0.2–0.6 (0.4–1.2) Trifthazin 0.005–0.01 (0.01–0.03)
Apathetic-abulic	The same + Nuredal 0.025–0.05 (0.05–0.35) Melipramin 0.025–0.075 (0.05–0.3) Grandaxin 0.05–0.1 (0.1–0.2)	The same + Phrenolon 0.005–0.02 (0.01 – 0.06) Pyrazidol 0.025–0.075 (0.05–0.4) Ethaperazyn 0.004–0.008 (0.012–0.06)
Vegetative-vascular dystonia of sympathetic-adrenal type	Anaprylin 0.025–0.05 (0.04–0.1) Octadin 0.01–0.025 (0.15) Pirroxan 0.015–0.03 (0.06–0.18) Butyrozan 0.01–0.02 (0.18) Dihydroergotamin 5–10 (15 - 40) drops Ergotamin 10–20 (20–60) drops Tinctura Paeoniae 20–30 (60–120) drops Tinctura Vallerianae 20–30 (60 - 120) drops	**In case of crisis:** Seduxen 0.02–0.04 (0.06–0.12) Pyrroxan 1–2 mL, 1% solution Butyroxan 1–2 mL, 1% solution Ornid 0.5–1 mL, 5% solution Baralgin 5 mL Maxigan 5 mL

Vegetative-vascular dystonia of vago-insular type	Atropine Sulphate 0.00025–0.001 (0.003–0.005) Belloid (bellaspon, bellathaminal) 1–2 (3 - 6) tablets Kofethamin 1–2 tablets Zelenyn's drops 20–25 (60–75) drops Tinctura Belladonnae 5–10 (15 - 30) drops Spazmolytin 0.05–0.1 (0.15–0.3) Scopolamini Hydrobromide 0.00025–0.0005 (0.00075–0.0015) Calcium Chloride (Gluconate) 1–3 (2–6)	**In case of crisis:** Seduxen 0.02–0.04 (0.06–0.12) Natrium Caffeine-Benzoate 2–4 mL, 10% solution Dimedrolum 1–2 mL, 1% solution Suprastin 1–2 mL, 2% solution Baralgin 5 mL Maxigan 5 mL

Under suddenly rising radioecological disasters the search and revelation of mental patients are held with first medical aid providing, sorting according to the psychic pathology severity (low, moderate and high), in necessity — evacuation and first medical assistance providing. Worth to note that self-help and mutual aid in such patients is as a rule ineffective because of mental disorders presence.

In first medical aid providing the attention is to be paid to the patients selection being in acute psychotic state, arrangements to be applied for patients themselves and surrounding people safety providing, preventing their inter-induction and massive panic reactions rise. In case of psycho-locomotive agitation under cardiovascular system disorders absence the I/M injections of Aminazine (2–4 mL, 2.5% solution), Tizercine (2–4 mL, 2.5% solution), Seduxen (2–6 mL, 0.5% solution) is recommended; in some cases — fixation to the stretcher, bed etc. In paroxysmal dyscinesia the Sodium caffein-benzoate is to be injected I/M (1–2 mL, 10% solution); Cyclodolum is prescribed in tablets — 0.004–0.01 g; Parcopan — 0.005–0.01 g daily.

In concomitant somatic-neurological pathology presence the relatively low doses of psychotropic preparations use is advisable, especially of Aminazine (as it decreases arterial pressure and can induce orthostatic collapse). In such cases the amplifying effect of Dimedrolum can be involved (1–3 mL, 1% solution) both with dehydration action of magnesium Sulphate (5–10 mL, 25% solution) being injected in mixture with neuroleptics and tranquilizers.

Psycho-locomotive dormancy (stupor) requires the I/M injections of calcium chloride (10–30 mL of 10% solution), Aminazine low doses (1 mL, 2.5% solution), Tizercine (1 mL, 2.5% solution), Haloperidolum (1–2 mL, 0.5% solution), Seduxen (1–2 mL, 0.5% solution). The psychopharmacological remedies are combined with cardiovascular and respiratory medications if necessary. The psychotherapeutic amplification of prescribed medications effects is of high importance.

In all stages of medical aid providing the *psychotherapy* is one of its leading methods. Substantial contribution to the psychotherapy programs elaboration and application in border-line neuropsychiatric disorders among survivors was made by A.M.Morozov (1988–1992).

Psychotherapy programs are focused on organism biological functions correction, psychic spheres normalisation, microsocial re-adaptation and rehabilitation.

Systemic psychotherapy stages sequence is following:

1. Acute neurotic symptomatic disactualisation.
2. Symptomatic psychotherapy.
3. Social-psychological correction.
4. Psycho-prophylactic habit fixation.
5. Family psychotherapy.

Hypnosuggestion being the psychotherapy main methodology for states similar to neurasthenia is applied from first to last seance. Complete psychotherapy seance consists from hypnosuggestion with curative break — 50 minutes, autosuggestion — 10 minutes, psycho-hygienic complex — 30 minutes and elucidative psychotherapy.

Psychotherapy of states similar to obsessive neurosis includes the elucidative psychotherapy — 15–30 minutes, waking suggestion (in reality) — 3–6 minutes, hypnosuggestion — 30–40 minutes (up to 7th seance) and psychohygienic complex — 15–20 minutes.

States similar to hysteria require the personality contact settlement with patient. Complete seance includes the elucidative psychotherapy — 10–15 minutes, hypnosuggestion — 40 minutes, auto-suggestion — 10 minutes, psychohygienic complex — 20 minutes. After autosuggestion habits acquirement the training in pathological situation is initiated. Within all the treatment term in case of firm contact with patient the attempts can be applied for his reorientation, that requires extreme carefulness from the psycho therapeutist.

Psychohygienic complex is designed for general state improvement, headaches and sleeping disorders prevention, barometric pressure drops impact prophylaxis in weather changes. Complex includes the express-relaxation, rest in relaxed state, purposeful autosuggestion, coming out from relaxed state and physical training.

Psychotherapy effectiveness is real in case of groups amount not exceeding 8–10 persons having similar clinical symptomatic.

A.K. Napreyenko & K.N. Loganovsky (1995) proposed psychotherapy programs including psychological work with patients and their micro-milieu members. In adaptation reactions within personality reserves and moderately expressed mental disorders the rational psychotherapy is conducted in combination with sedating physiotherapy procedures, acupuncture, adaptogenes & nootropic preparations taking; on indications — low doses tranquilizers and psychostimulators.

In stable psychopathological states the differentiated protocols of individual and collective-group psychotherapy include rational & indirect psychotherapy, auto training, wake suggestion, hypnosuggestion and other methods. They are aimed on the disease reflection various levels correcting impact: perceptive, emotional, intellectual, motivational ones. At that efforts are applied towards prevention of patients «retire into» or «leave for» disease, effective forms elaboration for socially determined psychic response on situation related to disaster and changes in surrounding important for the patient, personality adequate compensation mechanisms activation. Psychotherapeutic conversations and suggestions are to be directed of the "range of discretion" and purposeful response widening under psycho-traumatising situation, links to outward things enrichment, the so-called assimilated helplessness surmounting. In psychotherapy conduction the leading motivations are filled in by higher order content, depressive tendencies and other mental disorders specific manifestations are eliminated, daily activity is elevated both with degree of involvement in struggle against disease; workability and frustration tolerance, self-appraisal and own abilities & expectations levels are changing.

Substantial role is featured to the *sexual disorders* correction. Rational psychotherapy with wake suggestion elements is of highest importance aiming neurotic symptomatic disactualisation. The phallus-vascular stimulation with local negative pressure (LNP) by R.V. Beleda. Seance duration is to be 3–4 expositions for 20–30 minutes (6–10 seances). Anabolic steroids therapy is applied in androgen insufficiency. Chorionic gonadotropin application effect was registered (1500 IU intramuscularly 2 times a week, 6–8 injections per course). Under involution processes rise the testobromlecyt is recommended (0.3 3 times a day for 3–4 weeks). Vascular-active medications inclusion is expedient — Jogistrin, Jochimbin, Tentex-forte etc.

The *outpatient management and rehabilitation methods* role in exposed persons suffering psychoneurological pathology is to be marked. Supporting therapy in outpatient setting is presented with remedies prescribing elevating organism resistance (Tincture Ginsengi, Eleuterococci, Araliae Manshuricae; Pantocrinum) for month or more. Multi-vitamin preparations prescribing is recommended (Moriamin, Unicap, Olygovit, Essenciale-forte). Besides that psychological and psychotherapy support is provided both with general-hygiene arrangement complex.

In *outpatient settings* the health state control is provided both with supporting therapy courses for persons suffering psychoneurological diseases. Remedies elevating organism resistance (Pantocrin, Tincture Ginsengi, Schizandrae, Araliae Manshuricae, Paeoniae; extractum Eleuterococci; Saparal, Rantaril etc.) is expedient. Stated remedies intake is added by the easily-digestive multivitamin complexes (Aerovit, Decamevit, Quadevit, Lipostabil, Essentiale-forte, Unicap, Oligovit etc.) and biostimulators (FiBS, Aloe, Placenta suspension, Corpus Vitreum etc.). Supporting therapy courses are applied for 1–1.5 months 2–3 times a year. In discirculation disorders presence in disease clinical pattern the preparations improving brain and peripheral circulation, both with nootropic remedies stated above are to be added to the outpatient management complex.

Taking into account the survivors psychoneurological state peculiarities the general hygienic recommendations complex inclusion in the management general scheme is recommended for stress factors impact elimination, i.e.:

- psycho-traumatising situations at home and at work reduction;
- labour and nutrition regimen normalisation;
- non-medication management through psychological support and psychotherapy various forms, physical training, thermal training, physiotherapy (massage, medical baths, electromagnetic therapy, acupuncture, sanatorium/health-resort treatment).

Physiotherapy and sanatorium/health-resort treatment is of independent and positive role in psychotropic medications doses decrease. *Sanatorium/health-resort treatment* is of especial position.

Sanatorium/health-resort management complex includes diet-regimen arrangements, physiotherapy procedures, balneal treatment, natural factors application (walks in open air, curative sleep near water (ponds etc.), mineral waters consumption etc.). In case of need the sanatorium/health-resort treatment can be completed by some medications prescription (generally strengthening remedies, multi-vitamin complexes, vascular-active and nootropic medications). Preference is to be given to the middle-zone health-resorts: Kharkov province and Zakarpatje of Ukraine, Baltic states, Western Europe etc. within whole year. Sanatorium/health-resort treatment in Crimea, Caucasus, Southern Europe countries, Middle East etc. is available only within Autumn/Spring season for patients suffering psychoneurological pathology mild or moderate forms.

Frequent and severe paroxysmal states with pronounced psychic disorders, cerebral and spinal insults in disease acute phase, central and peripheral nervous system inflammatory and hereditary-degenerative diseases exacerbation are the contra-indications for sanatorium/health-resort treatment.

Among the therapy-prophylactic arrangements the *diet* is of substantial role as it is to be full-value, high-calorific with protein significant content (up to 140 g). Clabber, milk, kefir inclusion in patients nutrition is expedient aiming bowel flora evolution towards lactate-producing zymosis bacillus; among fats the preference is provided to the vegetable oils containing essential polyunsaturated fatty acids. In hemopoiesis function insufficiency the liver

paste or underbaked liver foodstuffs are to be prescribed 2 - 3 times a week. In case of strontium retention the diet with magnesium salts predominance over calcium ones is indicated: white bread and cereals amount is to be decreased; apples, prunes and cacao consumption — to be elevated. Stated diet is to be followed for approximately 2 weeks, after that the so-called «zigzags» are made (for 10 days) i.e. return to the ordinary food. The full-value diet is to contain required amount of vitamins [Kurshakov N.A., 1963].

Nervous system diseases *primary prophylactics* basis is to be provided by risk factors elimination, such as occupational and environmental insalubrities, smoking, alcohol consumption, hypokinesia, body mass abundance, baking salt excessive consumption, psychoemotional overloads and nervous stresses. Any of the named factors exclusion enables the health state amelioration attainment. Smoking is one of the most unfavorable factors supporting the obstructive bronchitis symptoms, digestive tract inflammation processes presence in overwhelming majority of patients, that in its turn stipulates the psychoneurological disorders genesis and progress deterioration.

Optimal amount of physical training elaboration is recommended for hypokinesia overcoming that is most precisely diagnosed through exercise bicycle test. Low intensive prolonged loading with exercises frequent repeat is advisable for inclusion in training program. Pacing and walks are the physical loading most simple type. The physical activity elevation resulting in psychogenic stress impact decrease is surveyed. The last one is reached also with psychotherapy and permanent psychological support.

The 1–2 fasting days (vegetable, fruit, meat, curd etc.) holding on the physical loading elevation background is indicated in patients with body mass excess.

Alcohol consumption exclusion, body weight maintenance within age range norm stipulated serum cholesterol content decrease, prevent atherosclerotic process early rise in coronary, brain and peripheral vessels. In cholesterol content elevation patients are recommended the magnetic therapy, liver zone galvanisation conduction, sulfurous baths prescribing.

Nervous system diseases secondary prophylaxis is initiated also from risk factors elimination. Acupuncture; carbonic, pearly and sage baths; circular and contrast curatives shower, attending the swimming pool (in paroxysmal states absence) are of important role in the secondary prophylaxis system. Sedative preparations, α- & β-adrenolytics low doses are indicated as prophylactic arrangements (depending on disease clinical presentation).

Psychosomatic pathology high prevalence among survivors (hypertension, peptic ulcer disease, heart ischemic disease, diabetes mellitus etc.) defines the secondary prophylaxis extreme actuality. In stable somatic disorders rise the angioprotectors, vitamin complexes and brain metabolism improving remedies prescribing is necessary in discirculation encephalopathy; nicotinic acid preparations, Solcoseryl, physical methods — in case of peripheral neuro-vegetative syndromes.

Prophylactic treatment choice is held on the basis of complex estimation of disease clinical progress, organs and systems involved in pathology process functional state especially nervous, cardiovascular, immune and endocrine ones.

Mental disorders *primary prophylaxis* in survivors lies in risk factors early identification both with preventive curative-prophylactic arrangements application. Curative and social arrangements are executed in the *secondary prophylaxis* framework being focused on psychic deviations relapse prevention. At that the supporting therapy cources are carried out. *Tertiary prophylaxis* is applied aiming personality pathological evolution various forms and social dysadaptation prevention. For that risk factors peculiarities are analyzed related to personality structure and pathognomonic to it meaning situational moments. Arrangements are executed for the last ones disactualization and personality re-orientation to the positive relations.

Fifteen years experience of Chernobyl disaster health consequences research indicates the priority of survivors' mental health protection regarding the disaster unfavourable consequences overcoming.

Mental health therapeutic resistance is defined by the Chernobyl disaster consequences unfavourable factors impact complex nature where the radiation and psychogenic ones are of highest importance. Their impact is amplified by social-economic problems of post-soviet period. As the result the extremely complex and polymorphous clinical patterns of psychic and especially psychosomatic disorders are formed presenting serious difficulties for correction. Besides that problems of mental health protection of other extreme situations survivors became of extreme actuality i.e. wars, acts of terrorism, catastrophes, natural calamities etc.

Exiting in Ukraine system for curative-prophylactic aid providing to extreme situations survivors and after Chernobyl disaster in particular is not enough effective by virtue of mainly organizational reasons:

- *Extreme situations psychiatric service* absence in the country.
- *United coordination center* absence in the country *for mental health protection* of extreme situations survivors.
- *Specialised psychiatric and narcology beds and/or departments* absence in multi-profile curative-prophylactic institutions structure providing medical aid to the Chernobyl disaster survivors. As the result virtually any problem of mental health disorders in survivors occurs insoluble in present multi-profile curative-prophylactic institutions providing them medical aid. But rather guiding for treatment to the specialized psychiatric and narcologic institutions produce as a rule protest from side of patients and their relatives. As a result often no adequate medical aid is provided to the substantial part of patients.
- *Succession* absence in mental disorders management of Chernobyl disaster survivors between specialised psychiatric (narcologic) and somatic-neurological hospitals.

Thereby the *National service for mental health protection of extreme situations survivors* is the actual problem. Effective mental health providing to extreme situations survivors is solely available in case of neuro-mental, personality, somatic and social spheres synchronous correction combined to the organism reserve capacities optimisation.