INDIAN DIETETIC ASSOCIATION

GUIDANCE FOR COVID-19 PATIENTS

Good nutrition is crucial for health particularly in times when the immune system might need to Fight back.

The indian dietetic association (IDA) aims to provide a guidance for medical nutrition therapy (MNT) for an effective fight to the virus.

THE GUIDANCE IS DIVIDED INTO VARIOUS SECTIONS

- Section 1 - Guidance for mild symptoms
- Section 2 - Guidance for the critically ill COVID -19 patients
- Section 3 - Guidance for rehabilitation & recovery
- Section 4 - Guidance for food handlers

SECTION 1 GUIDANCE FOR MILD SYMPTOMS OF COVID 19

- Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness & recover without requiring special treatment.
- Older people, obese people & those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, cancer & immune-compromised patients are more likely to develop serious illness.
- Whenever available, diet & nutrition counseling should be performed only by experienced qualified dietician or a nutritionist or professionals (registered dieticians, experienced nutritional scientists, clinical nutritionists & specialized physicians).
- For patients who can eat on their own & have no risk of vomiting aspiration, oral diet should be given priority as soon as possible & the goal is to meet normal nutritional requirements.
- Dietary interventions related to the care of the patient with COVID-19 should take into consideration "cluster care," meaning all attempts made to bundle care to limit exposure.

NUTRITION FOR NON-CRITICALLY ILL PATIENTS WITH MILD SYMPTOMS

NUTRITION ASSESSMENT

- Must or NRS-2002 have been the recommended as the validated nutrition screening tool to be administered.
- To limit exposure, dietitians can work with any of the following
  - Rely on other providers to collect physical data on the patients
  - Telehealth visits(virtual or telephone)
  - Use audio & video platforms & apps
- **DOCUMENTATION OF ASSESSMENT FINDINGS CRUCIAL**
  - Where/how the information was received
- An optimum nutrition plan needs to be developed in collaboration & co ordination with all medical teams.

NUTRITION MANAGEMENT FOR MILD SYMPTOMS

- Good nutrition helps the body fight infections, so provide adequate but not excessive nutrients(avoid overfeeding) & maintenance of healthy body weight is important
- Increase frequency of meals to compensate for the increased caloric requirements of fever.
- The food should include a variety of foods including energy-rich foods, meat, milk, legumes & pulses, fruits & vegetables
- Consider supplementation with vitamin C, zinc, vitamin A, B6, D, E, iron, folate & fiber if not getting enough from the diet.
- Coughs can be relieved by use of soothing foods such as warm liquids vegetable soup or chicken soup, warm water, some honey with ginger or soonth.
- Sore throat can be relieved by taking tea, honey, ginger, turmeric, sage.
- The use of culinary herbs like kalonji (onion seeds) turmeric, ajwain, ginger, oregano, sage & cinnamon may be beneficial.
- Increased consumption of fruits and vegetables is encouraged to improve antioxidant levels in the body
- Ensure enough sleep, reduced stress, exercise, avoid intake of alcohol & tobacco products.

NUTRITION MANAGEMENT FOR MILD SYMPTOMS WITH DYSPNEA

- Aequacy of macronutrient intake to be ensured.
- In case of dyspnea (shortness of breath), reduce carbohydrate quantity & stress on low glycaemic index carbohydrates and meals to facilitate less rq generated
- Fat is an important source of calories & the quantities can be increased in dyspnea, simultaneously keeping in mind any cardiovascular or dyslipidemic co morbidities present.
- Fats to be used for cooking can be primarily groundnut , soya, til, rice bran oil, & canola oils.
- Mct oils like coconut or ghee can be used to increased caloric density
- Micronutrient rich nuts & seeds should be included in forms that are easy to ingest.
- Sources of omega 3 fats like flaxseeds, walnuts, fatty fish must be included to boost immunity & decrease inflammation.
- Eat proteins from a good source like eggs, dairy, legumes , pulses dals, & lean meat in addition to a Healthy diet.

IMPORTANCE OF HYDRATION AND NUTRITION DURING ILLNESS

FLUID DEFICITS OCCUR DUE TO :

- Hydration and nutrition play an important role in the body's response to and recovery from the COVID-19 virus
- Fever related sweating
- Coughing & breathing.
- Vomiting &/or diarrhea
- Inadequate fluid intake related to poor appetite

MAINTAINING FLUID STATUS WITH MILD SYMPTOMS

- Drinking water & clear liquid beverages are important even if not thirsty.
- It is recommended to replace body's fluid losses to thin respiratory secretions.
- Frequent small sips of liquids every few minutes would be helpful.
- For vomiting or diarrhea, oral rehydration solution can be consumed in addition to water.
- One can use a variety of liquids to avoid taste fatigue.
- Including liquids such as buttermilk, lime water, ice tea, unsweetened fruit juices, moong paani can be recommended to increase the fluid intake.

SECTION 2

GUIDANCE FOR NUTRITION THERAPY IN THE PATIENT WITH COVID-19 DISEASE REQUIRING ICU CARE

- Good supportive care remains the cornerstone in managing critically ill patients with COVID-19. Minimize catabolism by ensuring adequate intake of nutrients through normal diet, parenteral or enteral nutrition depending on severity of illness.
- The need to address the provision of critical care nutrition remains an integral component of these supportive measures.
- The nutritional management of the ICU patient with COVID-19 is in principle very similar to any other icu patient admitted with pulmonary compromise.
- Patients receiving inadequate oxygen may complain of anorexia, early satiety, malaise, bloating, & constipation or diarrhea.
- In ICU patients with dysphagia, texture-adapted food can be considered after extubation. If swallowing is proven unsafe, en should be administered.
- Intubated patients usually require enteral tube feeding or parenteral feeding.

DELIVERY OF NUTRITION IN CRITICALLY ILL PATIENTS

TIMING OF NUTRITION DELIVERY IS CRUCIAL

- Early enteral nutrition (EN) within 24-36 hours of admission to the ICU or within 12 hours of intubation & placement on mechanical ventilation should be initiated proactively, specially if the patient cannot maintain voluntary adequate oral intake.
- Early enteral feeding at a trophic rate is usually tolerated in most patients with sepsis or circulatory shock.
- In case feeding intolerance with ileus (abdominal distention, vomiting) are present in a COVID-19 disease with shock, en feeding can be suspended
- Early PN should be initiated as soon as possible in the high-risk patient for whom early gastric en is not feasible.

DELIVERY OF NUTRITION IN CRITICALLY ILL PATIENTS

- En is preferred to parenteral nutrition (PN). En should be withheld in the patient with hemodynamic instability requiring vasopressor support
- Continuous rather than bolus en is strongly recommended
- Feeding should be initiated with low dose en, defined as hypocaloric or trophic, advancing to full dose en slowly over the first week of critical illness to meet energy goal of 15-20 kcal/kg actual body weight (ABW)/day (which should be 70-80% of caloric requirements)
- Protein goal of the unstressed adult patient with adequate organ function requiring nutrition support is 1.3 g/kg/day-1.5g/kg/day.
- Requirements may rise with metabolic demands to levels of about 2 g/kg/day.1.2-2.0 gm/kg ABW/day.
- Fat & carbohydrate needs are adapted to the energy needs while considering an energy ratio from fat and carbohydrates between 30:70 (subjects with no respiratory deficiency) to 50:50 (ventilated patients)

FORMULA SELECTION

- In the early acute phase of critical illness, enteral formula choice should be of a standard high protein (> 20% protein). It should be polymeric & isosmotic.
- In case of significant gi dysfunction, a fiber free formula may be better tolerated. It is important to re initiate a fiber containing formula or supplement as soon as the gut dysfunction is resolved to offer positive gut modulating & microbiota benefits
- Benefits of fish oil containing formulae have been documented as beneficial due to the immune modulation from omega 3 specially in viral infections.
- In patients with mild & severe sepsis, immune modulating formulae may be harmful & therefore are not recommended.
- Oral nutritional supplements (ons should be used whenever possible to meet patients' nutrition needs, when dietary counseling may not be sufficient to increase dietary intake to reach nutritional goals could & provide at least 400-600 kcal/day including 30 g or more of protein/day.

MONITORING NUTRITION TOLERANCE

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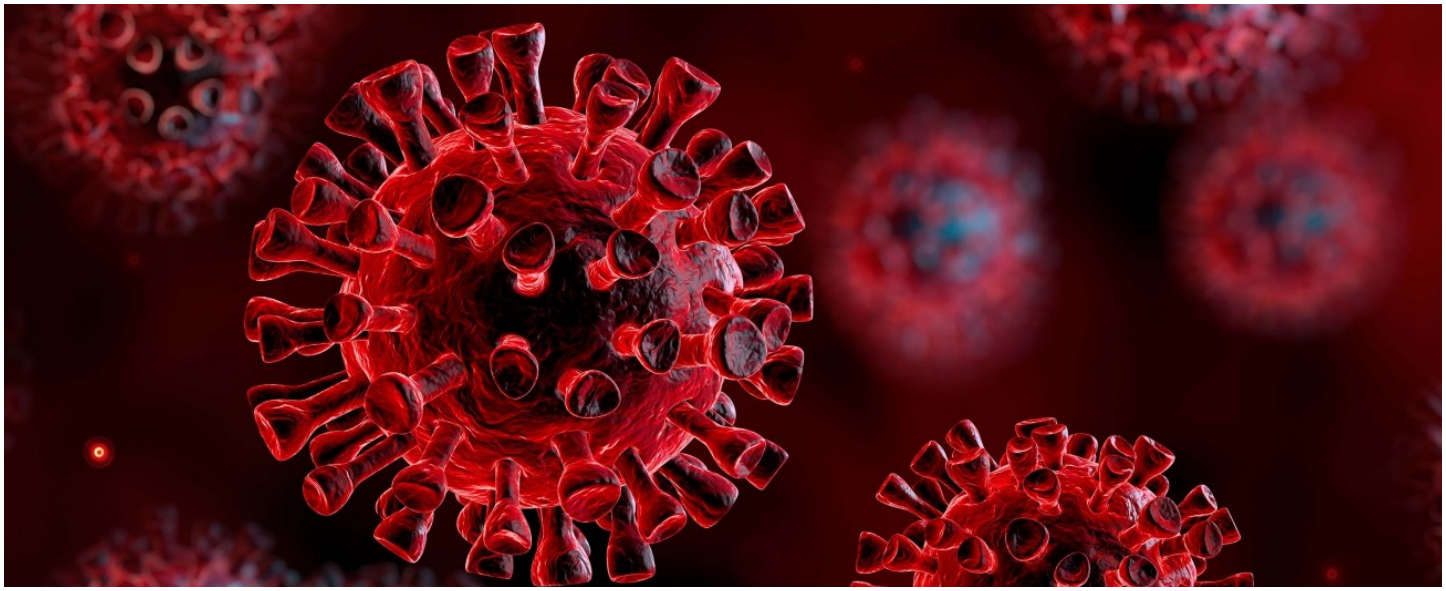
MAINTAINING FLUID STATUS WITH MILD SYMPTOMS

- Eenteral feeding intolerance (EFI) is common during the early and late acute phases of critical illness.
- Gastric residual volume (GRV) monitoring is not reliable for detection of delayed gastric emptying & risk of aspiration, has been shown to be a deterrent to the delivery of en, may not be routinely monitored.
- Patients should be monitored by daily physical examination & confirmation of passage of stool & gas.



FLUID & ELECTROLYTE BALANCE

- Establish need and maintain fluid /electrolyte balance.
- **Fluid:** balance fluid & electrolyte intake to output. Ideally, fluid and electrolyte intake should balance the net output.
- Fluid monitoring to facilitate feeding: last 24 hr fluid output + 500ml if no edema or 300mls if there is edema.
- **Sodium:** is restricted, depending on the level of urinary excretion. 2400 mg per day (one leveled teaspoon) based on fluid & electrolyte balance.
- **Potassium:** potassium intake needs to be individualized according to serum levels.

MULTIVITAMINS, MULTIMINERALS & TRACE ELEMENTS

- These nutrients have been shown to increase T cell and B cell (antibody) immunity.
- Multivitamin & multi-mineral supplements recommended to be part of enteral &/or parenteral feedings in all patients
- Many a times increases demands to double or multiple times more than the RDA.
- Vitamin D deficiency has been associated with a number of different viral diseases including influenza. Therefore, vitamin D could work as an important therapeutic supplementation option for the treatment or prevention from this novel virus infection.
- Recommended dosage- vitamin d 10-100 mcg /day
- Vitamin A: this vitamin has been called “anti- infective” vitamin since many of the body's defenses against infection depend on an adequate supply.

SECTION 3
GUIDANCE DURING RECOVERY & REHABILITATION

- During recovery from COVID-19, the patient is counselled to continue to eat a high calorie, high protein diet. This diet along with regular exercise, would to regain any muscle mass that could be lost during illness and help to get back to your normal activities.
- A healthy balanced diets are important to maintain good health and immunity.
- The diet should have a high biological value proteins, complex carbohydrates & good fats.
- Micro-nutrients of importance to be included vitamin A, vitamin E, vitamin C, selenium, zinc, magnesium

PROTEIN & IMMUNITY

- The immune system is a wonderful collaboration between cells & proteins that work together to provide defense against infection.
- The immune system is dispersed throughout the body to provide rapid responses to infection. Cells travel through the bloodstream or in specialized vessels called lymphatics. Lymph nodes & the spleen provide structures that facilitate cell-to-cell communication.
- High protein foods for vegetarians include legumes , pulses, dals, chana, matki, moong, soya bean and soya products, dairy products.
  - Lentils & pulses -serving size: 30 g; protein per serving 6 g
  - Dairy products - serving size: 150 ml, protein per serving 5 g
  - High protein foods for mon-vegetarian include poultry, fish, chicken, eggs
  - Chicken/ fish -serving size: 100 g; protein per serving 20 g approx.
  - Egg –serving size: 60 g; protein 6.5 g

CARBOHYDRATE

- Complex carbohydrates usually comprise of whole cereals, starchy vegetables, whole grains. Carbohydrates are also present in fresh fruits and vegetables.
- It is recommended to include food items such as whole grain wheat flour, corn, red or brown rice, jowar, bajra, ragi, fresh fruits & vegetables
- Rrefined carbohydrates should be restricted in the diet. These occur in corn flour, refined wheat flour and products made of the same, refined sugar & products made of the same.
- In addition simple sugars occur in aerated & sweetened beverages & carbonated drinks which should be avoided.

INCLUDE GOOD FAT SOURCES

- Fat is essential for daily body process as well as for absorption of fat soluble vitamins & should be prescribed in optimal balance
- Fat should comprise of not more than 20-30 % of total caloric intake per day
- The ratio of types of fats for health needs to be followed– sfa:mufa:pufa is 1:1.5:1
- Saturated fat sources: animal product & dairy.
- Mufa based oils: olives, soya bean, ground nut, almonds, rice bran
- Omega 3 sources: ALA (flax seeds, sesame seeds, pumpkin seeds) & EPA & DHA (fatty fish such as salmon, tuna, mackerel, sardines etc.)
- Avoid transfats in diet

IMMUNE FUNCTION BOOSTING NUTRIENTS

- Deficiency of single nutrients also results in altered immune responses: this is observed even when the deficiency state is relatively mild.
- Of the micronutrients, zinc; selenium; iron; copper; vitamins A, C, E, and B-6; & folic acid have important influences on immune responses.
- Vtamin A is involved in the development of the immune system & plays regulatory roles in the immune processes which can help the body fight COVID-19 infection.
- RDA for vitamin A: adults 600 MCG of retinol or 4800 MCG of beta carotene
- Good sources include: carrots, pumpkin, dark green leafy veg, chicken liver, egg, mackerel fish, chicken. Combination of any 3 of these items would help achieve the daily requirement of this nutrient.

IMMUNE NUTRIENTS

- Vitamin C contributes to immune defence by supporting various cellular functions of the immune system. Its deficiency results in higher susceptibility to infections like COVID-19.
- RDA for vitamin C -adults 40 mg/ day
- Good sources include: amla, guava, orange, capsicum, broccoli, red amaranth leaves, sour limes
- Vitamin e is a potent antioxidant & has an ability to boost the body's immune functions especially in elderly populations which are more susceptible to COVID-19.
- RDA for vitamin e -7.5-10 mg (active form) alpha-tocopherol/day
- Good sources include: pistachios, halim or garden-cress seeds, almonds, zucchini, spinach, sunflower seeds & flax seeds

VITAMIN D

- Vitamin D Can Affect The Immune Responses. Deficiency in Vitamin D is Associated With An Increased Susceptibility To Infections Like Covid19.
- RDA For Vitamin D –600 -800 IU (Active Form D3) / Day
- Good Sources Include: Vitamin D3 -Eggs, Salmon, Red Snapper, Organ Meats, Ravas, Oyster & Vitamin D2 - Mushrooms, Soyabean, Sesame Seeds, A-Amaranth (Rajgira) , Walnuts, Ragi (Nachni), Corn, Lentils & Pulses.

ZINC & MAGNESIUM

- Zinc is crucial for normal development & function of immune cells. Deficiency of zinc is associated with immune dysfunctions which increases risk of infections like COVID-19.
- RDA for zinc: adults ranges between 10 -12 mg/ day
- Good sources include: lentils & pulses, soya, sesame seeds, garden-cress seeds or halim, almonds, walnuts & poultry.
- Magnesium acts as a cofactor for the immunoglobulin synthesis which are the immune cells of the body & plays a role in immunity & fighting infections such as COVID-19.
- RDA for magnesium: adult female & male - approx. 310 -350 mg/ day
- Good sources include: ragi, lentils & pulses, jowar, green leafy vegetables, almond, cashew nuts, sesame seeds, pumpkin seeds & sunflower seeds

HERBS AND SPICES ARE THE HEROS TODAY

- No single food is a super food & functions alone in the body specifically as an antiviral food to prevent COVID-19. Certain phytonutrients present in foods can help boost the immune function to fight infections such as COVID-19 at our DNA & RNA level.
- It would be thus advisable to use these herbs in higher frequency in daily cooking in marinades or tempering or as a tea or concoction to help boost immunity over time.
- Anti COVID-19 foods include: ginger, garlic, turmeric (fresh/ dry), basil or tulsi, neem, lemon grass.
- Indian ministry of ayurveda , yoga & naturopathy recommended herbs to be included such as holy basil- ocimum tenuiflorum (tulsi) in the family lamiaceae, ginger, turmeric and guduchi (tinspora cordifolia) at discretion.

SECTION 4
GUIDANCE FOR FOOD **HANDLERS**

EMPLOYEE MONITORING AND COUNSELLING

- Monitoring employees for any symptoms of COVID-19 & encouraging self-reporting in the event they have come in the contact of a COVID-19 positive patient.
- This could be done with an initial urgent interactive session & followed up periodically. Stress can be laid on self-reporting & self-quarantine if there has been a contact with a COVID-19, given the subclinical & asymptomatic states of the disease in the early days of infection.
- Sick patients must work remotely or take avail of paid leave & should join back only when deemed Professionally fit.

EMPLOYEE DISTANCE AND HYGIENE:

- Adequate care is required during food handling at the time of food pre preparation, preparation & portioning as there can be transmission from asymptomatic cases.
- Employees to maintain a distance of 1 meter from each other and wear masks at all times.
- Coughing & sneezing etiquette needs to be followed by sneezing/coughing into elbow or using tissues & immediately discarding it in the waste after use.
- Coronavirus may be active on surfaces & food packets. Thus, for accepting food ingredients & fresh produce delivery, during storage & procurement of the supplied for pre preparation & preparation, the employee must wear gloves & must follow correct hand washing protocol after touching or handling such material. Employees must avoid touching face and eyes.
- Food storage & preparation areas are to be sanitised regularly. Other possible fomites which could have a residual viral load like doors, handles, doorknobs, light switches, trolley jacks, work benches, equipment & any other surface identified by the hospital.

Issued in Public Interest by:
INDIAN DIETETIC ASSOCIATION