NLA Recommendations for Patient-Centered Management of Dyslipidemia

Part 2 – Draft

Abbreviations/Acronyms Used

- **AA** = African American
- **ACC** = American College of Cardiology
- **AHA** = American Heart Association
- **ART** = antiretroviral therapy
- **ASCVD** = atherosclerotic cardiovascular disease
- **ATP** = Adult Treatment Panel
- **CAC** = coronary artery calcium
- **CHD** = coronary heart disease
- **DASH** = Dietary Approaches to Stop Hypertension
- **FH** = familial hypercholesterolemia
- **HDL-C** = high-density lipoprotein cholesterol
- **HIV** = human immunodeficiency virus
- **HT** = hormone therapy
- **LDL-C** = low-density lipoprotein cholesterol
- **Lp(a)** = lipoprotein(a)
- **MI** = myocardial infarction
- **MNT** = medical nutrition therapy
- **NHW** = non-Hispanic white
- **NLA** = National Lipid Association
- **Non-HDL-C** = non-high-density lipoprotein cholesterol
- **PCOS** = polycystic ovary syndrome
- **RA** = rheumatoid arthritis
- **RDN** = registered dietitian nutritionist
- **SA** = South Asian
- **TG** = triglycerides
- **USDA** = United States Department of Agriculture

Lifestyle Therapies: Nutrition

- The National Lipid Association (NLA) Expert Panel recommends any of the following healthy dietary patterns for managing dyslipidemia: Dietary Approaches to Stop Hypertension (DASH) Diet, the United States Department of Agriculture (USDA) Food Pattern, the American Heart Association (AHA) Diet, the Mediterranean and Alternate Mediterranean Diets, and Vegetarian/Vegan Diets. However, they should be individualized based on the patient's lipid/lipoprotein profile. Also, patient preferences are important for guiding decisions about the dietary pattern to recommend to maximize dietary adherence. If alcohol is consumed as part of a healthy dietary pattern, this should be in moderation (≤7 drinks per week for women and ≤14 drinks per week for men).

Lifestyle Therapies: Nutrition

- The NLA Expert Panel supports a cardioprotective eating pattern for the management of dyslipidemia that includes <7% of energy from saturated fat, minimal intake of *trans* fatty acids, and limits cholesterol intake to <200 mg per day to lower levels of atherogenic cholesterol (low-density lipoprotein cholesterol [LDL-C] and non-high-density lipoprotein cholesterol [non-HDL-C]).

- Plant sterols and stanols are recommended for cholesterol lowering (2 to 2.5 g/day), as well as viscous fibers (5 to 10 g/day), as adjuncts to other lifestyle changes. However, individuals with sitosterolemia should avoid foods that are fortified with stanols and sterols.

- Soy protein foods are one source of plant protein among others (e.g., nuts, legumes), as a substitute for protein foods high in saturated fat that may be recommended as part of a heart healthy diet.

Lifestyle Therapies: Nutrition

- Dietary saturated fat may be partially replaced with unsaturated fats (mono- and polyunsaturated fats) to reach a goal of <7% of energy from saturated fats. This can be achieved by incorporating liquid vegetable oils that are high in unsaturated fats into the diet.

- Weight loss is recommended for overweight or obese individuals. A variety of dietary approaches can be implemented for weight loss. Any dietary approach will result in weight loss if energy intake is reduced. Consistent with this is to also advise current food-based and specific nutrient recommendations for implementation of a healthy diet that elicits beneficial effects on lipids and lipoproteins.

- Consumption of at least three 1-oz-equivalent servings per day of fiber-rich whole grains that have ≥1.1 g of fiber per 10 g of carbohydrate is recommended.

Lifestyle Therapies: Nutrition

- The NLA Expert Panel recommends advice to consume ≥4 servings/week (1 oz per serving) of nuts (including the legume, peanuts), because nut consumption has been consistently associated with reduced atherosclerotic cardiovascular disease (ASCVD) risk. Nuts can be included as a protein food or as source of healthy fat because of their fatty acid profile in which unsaturated fatty acids predominate.

- For patients with triglyceride (TG) levels ≥200 mg/dL, lifestyle therapy is indicated, including weight loss, if overweight or obese, physical activity, and restriction of alcohol and refined carbohydrates (sugars and refined starches). Partial replacement of dietary refined carbohydrate with a combination of unsaturated fats and proteins may help to reduce TG and non-HDL-C concentrations.

Lifestyle Therapies: Nutrition

- For patients with TG levels ≥500 mg/dL, a very low-fat diet (<15% of energy) is recommended to minimize chylomicronemia.

- The NLA Expert Panel recognizes that there are individuals who are hyperresponders to dietary cholesterol intake because of genetic or other variables. Dietary instructions for these individuals, when such information is known, may include further limiting cholesterol intake.

- Nutrition education by a Registered Dietitian Nutritionist (RDN), with follow-up and monitoring is recommended to promote long-term dietary adherence. Clinicians should, when feasible, refer patients to a RDN for medical nutrition therapy (MNT) to personalize heart healthy meal plans.

Lifestyle Therapies: Exercise/Physical Activity

- The recommended minimal frequency, intensity, and duration of exercise for improving the lipid profile (reduce TG and modestly raise high-density lipoprotein cholesterol [HDL-C]) are ≥5 days/week at 40-75% aerobic capacity, and at least 30-60 min of accumulated daily physical activity (at least 150 min per week). This level of physical activity is consistent with public health recommendations.

- To enhance the effects on TG and HDL-C, and produce reductions in LDL-C, as well as loss of body fat and weight, ≥2000 kcal per week (generally 250-300 min) of moderate or higher intensity physical activity is recommended.

- Resistance exercise is also recommended to play a supportive role in maintaining strength, balance, and bone density.

Groups with Special Considerations: Children and Adolescents

- Universal lipid screening of all children, regardless of general health or the presence or absence of ASCVD risk factors, is recommended between 9-11 years of age, with repeat lipid screening at 20 years of age, or earlier if dyslipidemia is present.

- If a child or adolescent patient is screened and has a fasting or non-fasting non-HDL-C level ≥145 mg/dL, then additional follow-up is recommended. Two fasting lipid profiles should be obtained and the results averaged for evaluation of the most appropriate course of action.

Groups with Special Considerations: Children and Adolescents

- Children at least 2 years of age with the following characteristics should be screened for dyslipidemia:
  - One or both biological parents are known to have hypercholesterolemia, or are receiving lipid-lowering medications
  - Have a family history of premature ASCVD in an expanded first degree pedigree (i.e., to include not only parents and siblings, but also aunts, uncles, and grandparents) in men <55 or women <65 years of age
  - Consideration should also be given to screening for those in whom family history is unknown (e.g., adopted)

- Children should be regularly screened for major risk factors and conditions associated with increased ASCVD risk, but there are no validated methods for risk scoring in patients <20 years of age.

Groups with Special Considerations: Children and Adolescents

- Decisions on target levels during treatment are a matter of clinical judgment, but age-appropriate, percentile-based cutpoints from the 2011 Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: National Heart, Lung, and Blood Institute should be considered as the *upper limits* for therapeutic atherogenic cholesterol goal ranges for managing children, adolescents, and young adults:
  - Non-HDL-C: 145 mg/dL
  - LDL-C: 130 mg/dL

- Cascade screening and reverse cascade screening are recommended to enhance detection of individuals at risk for familial hypercholesterolemia (FH).

Groups with Special Considerations: Children and Adolescents

- Diet and other lifestyle interventions, including increased physical activity and weight management when overweight/obesity is present, are recommended for lowering elevated LDL-C, non-HDL-C, and TG in children and adolescents. Dietary management strategies should be guided by a RDN when feasible.

- Children ≥8 years of age are potential candidates for pharmacologic treatment for lipid lowering. The following treatment plans can be considered:
  - Administer pharmacologic agents, primarily statins, when LDL-C level is ≥190 mg/dL and/or non-HDL-C is ≥220 mg/dL
  - Consider additional risk factors in addition to elevated LDL-C and/or non-HDL-C and follow the treatment algorithm from the 2011 Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: National Heart, Lung, and Blood Institute

Groups with Special Considerations: Children and Adolescents

- Statins and bile acid sequestrants are pharmacologic agents with evidence for efficacy and safety in children, adolescents, and young adults. There is limited evidence on the safety and efficacy of cholesterol absorption inhibitors in children, adolescents, and young adults.

- Consideration should be given to measurement of pretreatment fasting glucose or glycated hemoglobin, liver enzymes, and creatine kinase in pediatric patients for whom a statin is prescribed.

- Potential side effects with lipid-altering pharmacotherapy should be monitored in pediatric patients according to the recommendations from the 2014 NLA statin safety task force.

Groups with Special Considerations: Dyslipidemia in Women

- In general, women should be treated according to the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015) with the following special considerations.

- First-line cholesterol-lowering drug therapy, unless contraindicated, is moderate- to high-intensity statin. The statin dosage may be increased or the patient switched to a more efficacious agent, if goal levels of atherogenic cholesterol are not achieved. Statin therapy should be a consideration for patients at very high risk (i.e., ASCVD or diabetes mellitus with ≥2 major ASCVD risk factors), even if the pre-treatment levels of atherogenic cholesterol are below the treatment goals.

Groups with Special Considerations: Dyslipidemia in Women

- Non-statin drug therapy with a cholesterol absorption inhibitor, bile acid sequestrant, fibric acid, or long-chain omega-3 fatty acid concentrates (the latter currently indicated only for very high TG) may be considered for women with either contraindications for, or intolerance to, statin therapy, or in combination with statin therapy for patients who need additional lowering of atherogenic cholesterol to achieve treatment goals.

Groups with Special Considerations: Dyslipidemia in Women

- The use of niacin is not generally recommended for ASCVD prevention in women, but may be considered as monotherapy or add-on therapy when other atherogenic cholesterol-lowering agents are not an option for the patient.

- Women taking statins may be at increased risk for certain adverse effects, particularly myalgia. Variations between men and women observed in clinical studies of statin-related myalgia incidence may have been related to differences in age, comorbidities, body composition, and polypharmacy.

Groups with Special Considerations: Unique Issues in Women's Health

- Women should be screened for dyslipidemia before pregnancy or as part of the routine obstetrical laboratory examination.

- For women taking lipid-lowering medications prior to pregnancy, all, except bile acid sequestrants and prescription omega-3 fatty acids, should be stopped when the woman becomes pregnant or is trying to become pregnant.

- Women should be educated on the importance of pregnancy avoidance when lipid-altering therapies other than bile acid sequestrants and omega-3 fatty acids are used.

Groups with Special Considerations: Unique Issues in Women's Health

- Total cholesterol and TG levels in women with normal pregnancies should generally not exceed 250 mg/dL. If they do, the clinician should consider and evaluate preexisting or acquired medical conditions, including hypothyroidism, chronic kidney disease, liver disease, or uncontrolled diabetes mellitus.

- Hypercholesterolemia during pregnancy and breast feeding, especially in women with FH, may be treated with bile acid sequestrants, colesevelam being the preferred agent.

- Severe hypertriglyceridemia (TG ≥500 mg/dL) may be treated during pregnancy with prescription omega-3 fatty acids or gemfibrozil (in cases when benefit clearly outweighs risk, e.g., severe pancreatitis), after the gestational mid-point, and more commonly in the final trimester. These agents may be used during breast feeding.

Groups with Special Considerations: Unique Issues in Women's Health

- Severe or resistant cases of dyslipidemia (e.g., FH) may be treated with plasmapheresis/exchange during pregnancy and breast feeding.

- Polycystic ovary syndrome (PCOS) is a high-risk condition for dyslipidemia, metabolic syndrome, and obstetrical complications of preeclampsia, hypertension, diabetes, and premature delivery. All patients with PCOS, regardless of age, should undergo initial lipid and diabetes screening and more frequent follow-up screening is recommended, even if initial values are normal.

- The approach to risk stratification and atherogenic cholesterol treatment goals for women with PCOS should be the same as described for all patients with dyslipidemia in the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015).

Groups with Special Considerations: Unique Issues in Women's Health

- Therapeutic management of dyslipidemia in PCOS should focus on diet, exercise, and lipid-lowering medication, if needed. All lipid-lowering medications, including statins, may be used.

- Contraceptive choice impacts dyslipidemia. Combined oral contraceptives should generally not be used by women ≥35 years of age who smoke because of additive risk of stroke and myocardial infarction (MI).

- Sex hormone therapy (HT) should not be used for the prevention or treatment of ASCVD.

- Menopausal sex HT is the treatment of choice for significant menopause symptoms during menopause transition for women at minimal risk for ASCVD.

Groups with Special Considerations: Older Patients

- Primary prevention strategies in patients 65-79 years of age should be managed in accordance with the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015).

- For patients age ≥65 to <80 years of age with ASCVD or diabetes mellitus, moderate or high intensity statin therapy should be considered after a careful consideration of the risk-benefit ratio.

- For secondary prevention in patients ≥80 years of age, moderate intensity statin therapy should be considered based upon a provider-patient discussion of the risks and benefits of such therapy, consideration of drug-drug interactions, polypharmacy, concomitant medical conditions including frailty, cost considerations, and patient preference.

Groups with Special Considerations: Older Patients

- Risk calculators such as the ACC/AHA Pooled Cohort Risk Calculator or the Adult Treatment Panel (ATP) III Framingham Risk Calculator can be used in select elderly individuals with one additional risk factor to further assess risk, using the thresholds for high risk of ≥15% 10-year risk for a hard ASCVD event (MI, stroke, or death from coronary heart disease [CHD] or stroke) with the Pooled Cohort Equations, and ≥10% 10-year risk for a hard CHD event (MI or CHD death) using the ATP III Framingham Risk Calculator. However, these risk calculators have several limitations for use in the elderly, since advanced age is often the predominate driver of increased ASCVD risk, and this may result in overtreatment of lower risk elderly individuals.

Groups with Special Considerations: Older Patients

- Elderly primary prevention patients who are statin-eligible should undergo a patient-centered discussion with their provider about the risks and benefits of statin therapy so that they can make a more informed decision about taking statins over the long term.

- If the elderly primary prevention patient is unable to achieve atherogenic cholesterol goals after a minimum 3-6 month trial on lifestyle modification, the provider should discuss the pros and cons of drug therapy and, if feasible, prescribe moderate intensity statin therapy, particularly for patients with one or more ASCVD risk factor aside from age, with risk exceeding the high risk threshold using the Pooled Cohort Equations or ATP III Framingham Risk Calculator.

Groups with Special Considerations: Older Patients

- Coronary artery calcium (CAC) scoring may be particularly useful to further assess risk in elderly patients for whom questions remain about whether to prescribe drug therapy.

- If statin intolerance is an issue, consideration should be given to the use of alternate statin regimens such as low intensity statin therapy or non-daily moderate intensity statin therapy, low dose statin combination therapy with ezetimibe or bile acid sequestrants, or non-statin monotherapy (i.e., ezetimibe or bile acid sequestrant) or their combination, with a goal of at least a 30% reduction in LDL-C.

Groups with Special Considerations: African Americans

- In general, African Americans (AAs) should be treated according to the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015) with the following special considerations.

- Clinicians should be aware that AAs as a group are at increased risk for ASCVD.

- Because attributable ASCVD risk in AAs is less driven by dyslipidemia than in non-Hispanic whites (NHWs), particular attention should be given to assessing non-lipid risk factors, such as hypertension, overweight and obesity, type 2 diabetes mellitus, and physical inactivity, when ascertaining ASCVD risk.

Groups with Special Considerations: African Americans

- Although AAs have a lower incidence of metabolic syndrome than NHWs, because of a lower prevalence of TG and low HDL-C, the incidence of type 2 diabetes mellitus is higher.

- Because AA race/ethnicity is included in the 2013 ACC/AHA Pooled Cohort Equations for estimating 10-year ASCVD risk, this may be the preferable risk calculator to use in patients of AA race/ethnicity.

- CAC may have lower sensitivity as an indicator of CHD risk in AAs than in NHWs.

Groups with Special Considerations: African Americans

- Because lipoprotein(a) [Lp(a)] levels tend to be higher in AA patients, measuring Lp(a) for risk refinement may be important in AA patients in general, and of particular importance for those with a family history of premature ASCVD that is not readily explained by other risk factors.

- Clinicians should not withhold statin therapy from at risk AA patients with asymptomatic creatine kinase levels that exceed, but are <3.0 times, the standard upper limits of normal. When practical, normative upper limits for creatine kinase that are adjusted for age, race, and sex should be used.

Groups with Special Considerations: Hispanics

- In general, patients of Hispanic/Latino ethnicity should be treated according to the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015) with the following special considerations.

- Clinicians should be aware that Hispanics/Latinos in the United States are a diverse population group tracing their ancestry to Mexico, the Caribbean (Puerto Rico, Cuba, and the Dominican Republic), Central America (El Salvador and Guatemala), and South America. ASCVD risk factor burden varies widely among individuals of Hispanic/Latino descent, depending on their country of origin.

Groups with Special Considerations: Hispanics

- Hispanics/Latinos tend to have a greater prevalence of high TG and low HDL-C than NHWs, leading to higher levels of non-HDL-C, and an increased likelihood for discordance between LDL-C and non-HDL-C concentrations. LDL-C levels tend to be higher in Hispanic men compared with NHW men.

- Hispanics/Latinos have higher prevalence of type 2 diabetes mellitus, obesity, and metabolic syndrome compared to NHWs, particularly among women.

- Some cardiovascular risk equations (e.g., Framingham equations) may overestimate risk in Hispanic individuals.

Groups with Special Considerations: South Asians

- In general, patients of South Asian (SA) ethnicity should be treated according to the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015) with the following special considerations.

- Clinicians should be aware that SAs (including individuals who trace their ancestry to Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka; and also members of the SA diaspora – past generations of SAs who originally settled in other parts of the world, including Africa, Canada, the Caribbean, Europe, the Middle East, and other parts of Asian and the Pacific Islands) as a group are at increased risk for ASCVD.

Groups with Special Considerations: South Asians

- Patients of SA descent in the United States have a greater prevalence of insulin resistance than NHWs, and some of the metabolic disturbances that accompany this condition include high TG, low HDL-C, and dysglycemia.

- SAs have an increased prevalence of metabolic syndrome compared to NHW Americans. Clinicians should be aware that Asians have different waist circumference cutpoints for defining overweight/obesity for the definition of the metabolic syndrome than those recommended for Caucasian populations (≥37 inches [≥94 cm] for men and ≥32 inches [≥80 cm] for women).

Groups with Special Considerations: South Asians

- Clinicians should be aware that risk assessment methods may under- or over-estimate ASCVD risk when used in populations different from those in which they were developed. ASCVD risk equations may underestimate risk for SAs in particular, although the degree of underestimation is uncertain. Clinicians should consider this when making decisions about risk stratification and treatment.

- Due to the possibility of genetic variation in drug metabolism (as demonstrated mainly in studies of Chinese and Japanese patients), starting with a moderate intensity statin dosage and titrating upward to reach atherogenic cholesterol goals, or downward if intolerance occurs, is recommended for patients of Asian ethnicity.

- Because SAs are at increased risk for diabetes, vigilant monitoring for the potential of new-onset diabetes with statin treatment is warranted.

Groups with Special Considerations: Patients with Human Immunodeficiency Virus

- Clinicians should be aware that patients with human immunodeficiency virus (HIV) are at increased risk for ASCVD.

- A fasting lipid panel should be obtained in all newly identified HIV-infected patients before and after starting antiretroviral therapy (ART).

- Risk stratification is based on the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015) with initial risk stratification based on the number of major ASCVD risk factors, the use of risk prediction tools, such as the ATP III Framingham Risk Score or the ACC/AHA Pooled Cohort Equations if two risk factors are present, or the use of other clinical indicators to help inform clinical judgment when needed.

Groups with Special Considerations: Patients with Human Immunodeficiency Virus

- The non-HDL-C and LDL-C goals described in the NLA Part 1 Recommendations should be followed for HIV-infected patients (Jacobson 2015). Not all goals will be attainable, but there is incremental benefit in lowering non-HDL-C and LDL-C to approach these goal levels.

- Elevated TG ≥500 mg/dL that is refractory to lifestyle modification or changes in ART (if an option) should generally be treated with either a fibrate (fenofibrate preferred) or prescription omega-3 fatty acids. After TG is lowered (<500 mg/dL), non-HDL-C and LDL-C should be reassessed for appropriate management.

- Statin therapy is first line for elevated LDL-C; however, interactions between statins and antiretroviral agents and other medications must be considered prior to initiating lipid-lowering therapy.

Groups with Special Considerations: Patients with Rheumatoid Arthritis

- Clinicians should be aware that patients with rheumatoid arthritis (RA) are at increased risk for ASCVD. Other inflammatory and autoimmune diseases such as systemic lupus erythematosus also appear to be associated with increased ASCVD risk, but have been less studied than RA.

- Clinicians should be vigilant in ensuring that RA patients are routinely assessed for cardiovascular risk factors, such as hypertension, dyslipidemia, diabetes, family history of early-onset ASCVD, and smoking. Calculation of lifetime ASCVD risk can be considered for patients age 20-59 years.

Groups with Special Considerations: Patients with Rheumatoid Arthritis

- Statins are generally the first-line treatment for dyslipidemia in RA.
- At this time, atherogenic cholesterol treatment goals for patients with RA and other inflammatory diseases are the same as described in the NLA Recommendations for Patient-Centered Management of Dyslipidemia – Part 1 (Jacobson 2015).
- If an RA patient has had lipid levels checked during an RA flare, it is recommended that the lipids be re-checked when their disease is controlled.

Groups with Special Considerations: Patients with Residual Risk Despite Statin and Lifestyle Therapy

- For patients not at goal levels for atherogenic cholesterol on maximally tolerated statin therapy, consideration should be given to adding non-statin lipid-altering therapy to ongoing statin therapy for further lowering of atherogenic cholesterol, as long as the patient has sufficient ASCVD risk to warrant it, and the expected treatment benefit outweighs the risk for adverse consequences.

Groups with Special Considerations: Patients with Residual Risk Despite Statin and Lifestyle Therapy

- Recommended statin combination therapies to consider for further lowering of atherogenic cholesterol are, in the following order: first – ezetimibe 10 mg every day, second – colesevelam 625 mg 3 tablets twice a day (or 3.75 g powder form every day or in divided doses), and third – extended release niacin 2000 mg, daily.

- Fibrates and omega-3 fatty acids are first-line drug choices for patients with TG ≥500 mg/dL, although consideration may be given to using statin therapy as a first-line drug in patients with TG 500-999 without a history of pancreatitis.

Improving Patient Outcomes: Patient Adherence

- The provider should assess adherence to both lifestyle and atherogenic cholesterol-lowering medications at every patient encounter.

- A multidisciplinary health care team (such as a physician, nurse practitioner, nurse, physician assistant, pharmacist, RDN, or other allied health provider) is desirable to identify medication non-adherence and to facilitate strategies to improve adherence by helping patients overcome real (or perceived) barriers to adherence.

Improving Patient Outcomes: Patient Adherence

- A multi-faceted approach should be employed by clinicians to improve medication adherence, including: a) simplify the regimen; b) provide clear education using visual aids and simple, low-literacy educational materials; c) engage patients in decision-making, addressing their specific needs, values, and concerns; d) address perceived barriers of taking medication; e) identify suboptimal health literacy and use “teach-back” techniques to increase patient understanding of those behaviors needed to be successful; and f) praise and reward successful behaviors.

Improving Patient Outcomes: Team-Based Collaborative Care

- Health care teams for optimal lipid and ASCVD risk management may include, where available: the patient; the patient's primary health care provider; nurses; nurse practitioners; pharmacists; physician assistants; RDNs, including certified diabetes educators in some practices; exercise specialists; social workers; community health workers; and licensed professional counselors, psychologists, and health educators.

Improving Patient Outcomes: Team-Based Collaborative Care

- Health care team members should coordinate care support among various team members, use evidence-based guidelines/recommendations for dyslipidemia management, establish a structured plan for monitoring patient progress, and provide patients with a variety of tools and resources to improve their own care.

- Team-based collaborative care may be incorporated into the Patient Centered Medical Home as a strategy to address shortfalls in patient health care quality, access, continuity, and cost.