Rationale and design of the familial hypercholesterolemia foundation CAscade SCreening for Awareness and DEtection of Familial Hypercholesterolemia registry

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Background Familial hypercholesterolemia (FH) is a hereditary condition caused by various genetic mutations that lead to significantly elevated low-density lipoprotein cholesterol levels and resulting in a 20-fold increased lifetime risk for premature cardiovascular disease. Although its prevalence in the United States is 1 in 300 to 500 individuals, <10% of FH patients are formally diagnosed, and many are not appropriately treated. Contemporary data are needed to more fully characterize FH disease prevalence, treatment strategies, and patient experiences in the United States.

Design The Familial Hypercholesterolemia Foundation (a patient-led nonprofit organization) has established the CAscade SCreening for Awareness and DEtection of Familial Hypercholesterolemia (CASCADE FH) Registry as a national, multicenter initiative to identify US FH patients, track their treatment, and clinical and patient-reported outcomes over time. The CASCADE FH will use multiple enrollment strategies to maximize identification of FH patients. Electronic health record screening of health care systems will provide an efficient mechanism to identify undiagnosed patients. A group of specialized lipid clinics will enter baseline and annual follow-up data on demographics, laboratory values, treatment, and clinical events. Patients meeting prespecified low-density lipoprotein or total cholesterol criteria suspicious for FH will have the opportunity to self-enroll in an online patient portal with information collected directly from patients semiannually. Registry patients will be provided information on cascade screening and will complete an online pedigree to assist with notification of family members.

Summary The Familial Hypercholesterolemia Foundation CASCADE FH Registry represents a novel research paradigm to address gaps in knowledge and barriers to comprehensive FH screening, identification, and treatment. (Am Heart J 2014;167:342-349.e17.)

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Background

Familial hypercholesterolemia (FH) is a common genetic condition that affects all racial and ethnic groups[1] and results in severely elevated levels of low-density lipoprotein cholesterol (LDL-C) from fetal life and concomitant elevated risk of premature cardiovascular disease. It is estimated that >600,000 people in the United States have FH, yet <10% are aware of their condition.[2,3] Of those who are diagnosed, many do not reach recommended treatment targets. A US-based FH registry is needed to collect contemporary data on treatment patterns and outcomes with long- term goals of improving diagnosis, management, and reduction of unnecessary cardiovascular events.

Familial hypercholesterolemia is autosomal codominant, and the FH phenotype has been causally associated with mutations in the following genes: *LDLR*, the low-density lipoprotein (LDL) receptor gene; APOB, a gene encoding the protein constituent of LDL; or *PCSK9*, a gene encoding a protease that degrades LDL receptors.[4] The most dramatic form of FH is in patients who inherit 2 mutated copies of a causal gene, referred to as homozygous FH (HoFH), where LDL-C levels are generally>500 mg/dL (although there are reports of lower LDL-C levels in genetically confirmed HoFH).[5] Patients with HoFH have an extremely rapid accumulation of atherosclerosis with most experiencing xanthomas and severe vascular disease by adolescence or early adulthood despite interventions, including LDL apheresis, which led to the recent Food and Drug Administration approval of 2 novel therapies, lomitapide and mipomersen, specifically for HoFH.[6,7] Although HoFH is devastating on an individual level, HoFH affects approximately 1 in 1 million persons, with low overall public health impact.

Heterozygous FH (resulting from inheriting 1 mutated allele) is a common condition, affecting 1 in 300 to 500 individuals from all race/ethnic groups studied to date (higher prevalence exists in some founder populations).[8] In heterozygous FH (hereafter referred to as FH), LDL-C levels are typically 190 to 400 mg/dL (5-10 mmol/L). As a result of abnormally high-circulating cholesterol, adult patients with FH may present with a number of physical signs, including xanthomas (subcutaneous nodules on the tendons or ligaments) and xanthelasmas (yellow plaques occurring on or around the eyelids). Because of a lifelong burden of high LDL-C levels, individuals with FH have a >20-fold increased risk of premature coronary disease compared with the general population.[9,10] Untreated men have a 50% risk of a coronary event by the age of 50 years, and untreated women have a 30% risk by the age of 60 years. A number of validated algorithms using a combination of lipid levels, patient medical history, family history, key physical examination findings, and genetic testing assist in making the clinical diagnosis in adults.[3,8,11]

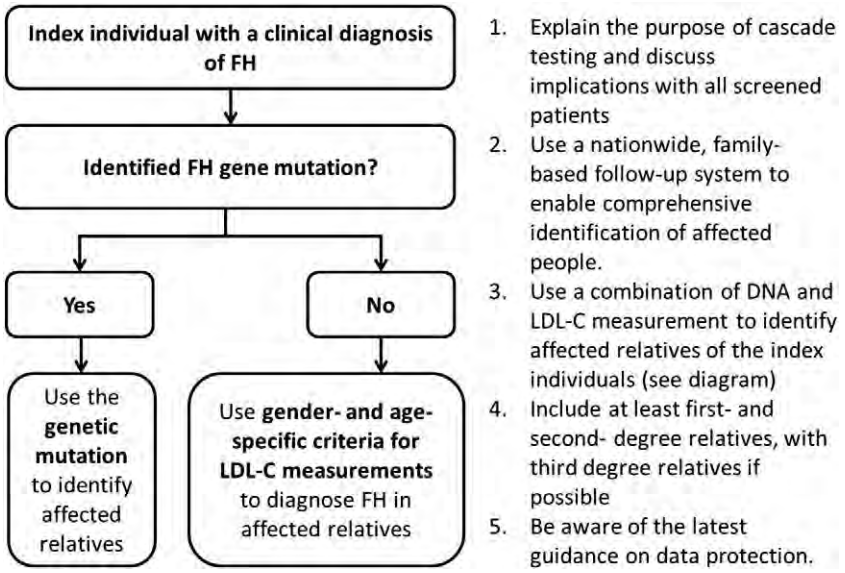
In 2013, the European Atherosclerosis Society issued a consensus statement underscoring the urgent, worldwide need for early diagnostic screening and aggressive treatment of FH.[12] Familial hypercholesterolemia is a significant international public health concern but can be characterized as a "winnable battle" due to the possibility of case identification using readily available tests and inexpensive, effective therapy. Asymptomatic FH patients treated with potent statin-based regimens have nearly identical event rates to healthy controls if treatment is initiated in adolescence or young adulthood.[13] However, optimal treatment often does not occur due to the low rate of FH diagnosis. Familial hypercholesterolemia demands lifelong pharmacotherapy often with multiple classes of lipid-lowering therapy to achieve optimal outcomes as dietary management and risk factor modification of nonlipid risk factors may be insufficient to prevent cardiac disease.

The suboptimal awareness of FH prevalence, genetic components, and health consequences highlights the need for enhanced education of patients and providers to promote timely FH identification and treatment. Because FH patients often appear healthy and have a low burden of traditional cardiovascular disease risk factors and because of suboptimal implementation of cholesterol screening guidelines in children and adults, many FH patients remain unaware of their diagnosis until after an acute cardiovascular event has occurred.[14]

Because FH is inherited in an autosomal dominant pattern, once an individual is diagnosed with FH, the opportunity to screen his or her family members presents itself. Cascade screening of first-degree relatives has been shown to be a cost-effective mechanism of case identification for FH. In 1 study of lipid screening among first-degree relatives of patients with confirmed FH from 2 lipid clinics, approximately half of first-degree relatives screened had inherited FH.[14] Importantly, nearly half of adult-affected relatives diagnosed by genetic screening are not on lipid-lowering drugs at the time of cascade screening diagnosis.[15,16] The Centers for Disease Control recently classified FH as a Tier 1 condition for cascade testing, with recommended implementation of the screening guidelines outlined in the National Institute for Health and Clinical Excellence (NICE) Guidelines for Identification and Management of FH (Figure).[17,18]

The Familial Hypercholesterolemia Foundation (The FH Foundation) is a patient-led, nonprofit, charitable organization committed to raising awareness, promoting optimal disease management, and improving the quality of life and survival of those with FH.[18,19] One of the key components of this effort is the reinvigoration of a national US FH registry effort through the launch of The FH Foundation Registry CAscade SCreening for Awareness and DEtection of Familial Hypercholesterolemia ("CASCADE FH"). The CASCADE FH is a national, multicenter initiative that will track FH therapy, family screening, clinical outcomes, and patient-reported outcomes longitudinally. The CASCADE FH Registry represents collaboration between The FH Foundation, lipid specialists, cardiologists, primary care providers, clinical scientists, and patients with FH. The Registry will use a hybrid enrollment design to maximize outreach and ensure that all interested FH patients have the option to participate. In accordance with these goals, participants will be identified using a variety of mechanisms, including screening by providers, screening of electronic health records (EHRs) for case identification, and online screening available to the general public.

Figure



The NICE clinical guidelines for cascade testing in FH.

Methods

Registry objectives

The FH Foundation CASCADE FH Registry has the following 4 specific objectives: (1) To promote awareness of FH prevalence, risk factors, and optimal disease management through education at both the patient and provider level; (2) To identify and enroll heterozygous and homozygous FH patients through clinic- and health care organization–based, community-based, and family-based screening initiatives to track therapy, patient-reported outcomes, and clinical outcomes over time; (3) To evaluate patterns of real-world clinical practice and patient experiences to contribute to the state of scientific knowledge about FH care, quality of life, and health outcomes; and 4) To increase the proportion of patients meeting guideline-recommended lipid targets.

Enrollment, data collection, and follow-up

Enrollment framework. The FH Foundation CASCADE FH Registry will implement a novel, hybrid recruitment, and enrollment design to maximize participation of confirmed and suspected FH patients. The enrollment framework is characterized by the following 3 possible points of contact: (1) Clinic enrollment, (2) Self-enrollment through an online patient portal, and (3) EHR identification coupled with patient contact and enrollment.

Pathway 1: clinic-based screening and enrollment. During the initial study phase, a number of specialized lipid clinics across the United States were invited to participate in the CASCADE FH Registry. Familial hypercholesterolemia patients at these sites who meet inclusion and exclusion criteria as described below will be eligible to enroll. Before entering patient data into the registry, each site will be required to receive institutional review board approval and obtain patient consent. Once the initial set of specialized lipid clinics has demonstrated acceptable feasibility for patient enrollment and engagement, additional sites will be recruited into the registry. Efforts will be made to enroll sites representing all geographic regions and types of institutions, including both community clinics and large institutional centers, and to ensure accurate reflection of real-world approaches to FH detection and management. Because information on quality of life and disease understanding will be collected through the online patient portal, providers will encourage patients enrolled at clinical sites to also self-enroll online (Pathway 2).

Pathway 2: patient self-enrollment. A primary aim of the CASCADE FH Registry is to ensure that each FH patient has the opportunity to participate, regardless of geographic proximity or treatment with a participating clinic-based study site. Potential registry participants will have the opportunity to self-enroll in the CASCADE FH Registry through an online screening mechanism. A link on The FH Foundation website (http://www.thefhfoundation.org) will direct potential participants to a brief screening questionnaire querying the individual's current clinical diagnosis of FH, genetic testing results, age, most recent LDL and/or total cholesterol level, and current lipid-lowering therapy regimen.

Patients with an existing clinical diagnosis of heterozygous or homozygous FH, positive genetic screen, or LDL or total cholesterol value indicating strong possibility of FH (per standard FH diagnostic criteria) will be directed to a page describing the rationale for the study and a general study description, followed by an online consent form describing privacy protection, information to be collected, and study follow-up mechanisms.[8,11] Agreement to this consent form will direct the patient to an online data capture form, followed by

Table I. The CASCADE FH Registry inclusion criteria by point of first contact

Clinic enrollment	Online patient portal enrollment

• Patients with a genetic mutation indicating FH
• Patients with an existing clinical diagnosis of FH as determined by ≥1 of the following sets of diagnostic criteria*:
  • US MEDPED Program criteria
  • Simon Broome Register criteria (probable or definite)
  • Dutch Lipid Clinic Network Criteria (probable or definite)
	• Patients with an existing clinical diagnosis of FH
	• Patients with a genetic mutation indicating FH
	• Patients meeting the following age and LDL or total cholesterol values:
	  • Untreated LDL >190 mg/dL or total cholesterol >300 mg/dL
	  • Treated† LDL >124 mg/dL or total cholesterol >195 mg/dL

* See online Appendix for full calculation.
† Assuming a 35% reduction in serum cholesterol with lipid-lowering therapy.

entry of patient contact information for further follow-up. Finally, patients will be provided information about screening of first-degree relatives and additional educational materials about FH. All patients not meeting basic inclusion criteria or not providing consent for the participation in the study will be directed to additional educational information and resources about FH.

Pathway 3: EHR screening. Electronic health record screening of large health care systems has recently been promoted as a successful strategy to identify patients eligible for clinical trials and registries.[20] The FH Foundation has partnered with several large health care organizations from the public and private sectors to conduct system-wide searches of EHR to identify potential FH patients based on LDL laboratory values and other criteria. After identification, the primary care provider of the potential FH patient is sent a notification letter describing the patient's high LDL level, at-risk status, and need for additional screening. The patient may then undergo additional clinical or genetic testing and be provided information about CASCADE FH and registry participation.

Inclusion and exclusion criteria. Inclusion criteria for CASCADE FH patients are based on an existing clinical or genetic diagnosis of FH or on treated or untreated cholesterol values as shown in Table I. Cholesterol cutoffs were based on the National Lipid Association guidelines for when FH should be suspected.[5] We will gather additional information from patients and medical records to be able to formally determine FH status based on existing criteria (Make Early Diagnoses to Prevent Early Death [MEDPED], Dutch Lipid Clinic Network, and Simon Broome).[8,11,21] Both heterozygous and homozygous FH patients are eligible to enroll. Patients younger than the age of 18 years will be enrolled only with the explicit consent of a parent or legal guardian. Patients will be excluded from enrollment at clinical sites when a known medical condition other than FH that is thought to contribute to hyperlipidemia (ie, untreated hypothyroidism, nephrotic syndrome, cholestasis hypopituitarism).

Data collection. For data entered at clinical sites, the primary source of information will be the patient's medical record. Baseline data elements to be abstracted and entered include patient demographics, medical history, patient FH history and diagnosis, FH type (heterozygous or homozygous), family FH history, physical examination findings, current lipid-lowering therapies, and laboratory values (Table II).

Data elements entered by self-enrolled patients in the online patient portal will include a subset of clinical information as well as questions on quality of life, disease-related anxiety, and depression. A short survey to assess patient understanding of FH health risks, available treatment options, and family member screening will also be included. The patient questionnaire was designed to be free of clinical jargon and pilot tested by FH patient volunteers to ensure ease of use by participants (onlineAppendix).

Follow-up data collection. For patients enrolled at clinical sites, providers will be asked to update information at yearly intervals. Medical records will be reviewed to assess changes in medications, occurrence of major adverse cardiovascular events, hospitalizations, genetic testing, laboratory values, and mortality since the last date of data entry. Follow-up data will be collected yearly for 3 years after initial enrollment. Self-enrolled patients may update data at any time by accessing the patient portal. Updated information on current medication regimens, clinical events, and quality of life will be collected. Annual reminder e-mails will be sent to all self-enrolled patients to ensure uniform entry of follow-up information.

Patient-reported data validation. To ensure collection of high-quality data on FH patient-reported outcomes, an annual validation of a proportion of self-enrolled patient records will be conducted to assess concordance between information entered in the online patient portal with data from their medical record. After baseline data entry, self-enrolled patients will be asked to provide contact information for their physicians and to sign a medical release for validation of patient-reported data. Of patients signing this medical release, a randomly generated 10% sample will be selected for validation on a yearly basis. Patient responses to questions regarding medication regimens, comorbid conditions, clinical events, and laboratory results will be compared to determine concordance between patient- and physician-reported data. Overall agreement, sensitivity, specificity, and κ statistics will be evaluated to determine concordance between responses. Based on prior validation analyses of patient-reported data, we expect moderate-to-good agreement between the 2 data sources (κ = 0.40-0.80)[22,23] Data elements with low rates of concordance will be assessed for clarity and may be refined to enhance sensitivity and specificity. Supplemental educational material may be provided for variables with low concordance to further promote valid data capture.

Longitudinal outcomes

Serial lipid values will be a key outcome of interest and will be examined to assess the adequacy of lipid-modifying therapies to achieve target LDL values. Longitudinal outcomes of interest will

Table II. Baseline data elements collected after patient self-enrollment and clinic enrollment

Patient-entered information (self-enrolled patients)

Enrollment information	Medical history	Treatment, laboratory, and examination	Additional
Demographics	Patient history	FH treatment	Patient-reported outcomes
Contact information	Cardiovascular comorbidities	Diet/exercise	Treatment satisfaction
Date of birth	Imaging and diagnostic tests	Medications (type, dose, frequency)	Quality of life
Race	Cardiac operations/procedures	Examintation/laboratory	FH understanding
Gender	Smoking history	Blood pressure	Additional
Insurance	Provider specialty	Anthropometrics	Clinical trial participation
	Age at FH diagnosis	Lipid values	Provider contact information
	FH genetic testing and results		
	FH signs and symptoms		
	Family history		
	Diagnosis status		
	Screening status		
	Cardiovascular events		
	Signs and symptoms		

Provider-entered information (clinic-enrolled patients)

Enrollment information	Medical history	Treatment, laboratory, examination, procedures	Additional
Demographics	Patient history	FH treatment	Additional
Contact information	Cardiovascular comorbidities	Diet/exercise	Clinical trial participation
Date of birth	Imaging and diagnostic tests	Medications (type, dose, frequency	
Race	Cardiac operations/procedures	Examination/laboratory	
Gender	Smoking history	Blood pressure	
Insurance	Provider specialty	Arcus, xanthomas, xanthelasmas	
	FH diagnosis type	Anthropometrics	
	Highest pretreatment LDL	Tanner stage	
	Age at FH diagnosis	Lipid panel	
	FH genetic testing and results	Metabolic panel	
	FH signs and symptoms	CBC	
	Family history	Imaging/procedures (within 5 y)	
	FH diagnosis and type	Stress test	
	History of premature MI	Angiography	
	Signs and symptoms	Calcium scan	

Abbreviations: *MI*, Myocardial infarction; *CBC*, complete blood cell count.

include medication changes, adherence, occurrence of major adverse cardiovascular events, side effects of treatment, and mortality. Primary patient-reported outcomes of interest will include notification and screening of family members, treatment satisfaction, disease-related perceptions, and quality of life measurements.

Statistical considerations

The CASCADE FH Registry will collect patient-reported and clinician-reported information to characterize treatment patterns and outcomes among FH patients. Because this study is not hypothesis-driven and no specific medical therapies or treatment interventions are being compared, formal prospective calculations were not conducted. However, we will periodically assess variations in lipid management, clinical events, and patient-reported outcomes to evaluate temporal changes in these variables. Standard statistical approaches commonly used in observational analyses will be used.

Data feedback and quality improvement

Sites participating in the CASCADE FH Registry will receive annual data feedback reports that will highlight treatment patterns, serial lipid values, and clinical outcomes for their enrolled patients compared with the national results. These reports will be designed to facilitate quality improvement interventions at participating sites and improve the treatment and outcomes of FH patients. Self-enrolled patients will have the opportunity to download their reported data directly as well as through preprogrammed self-feedback, electronic reports that can be accessed at anytime. These data can then be used to guide therapy to reach treatment targets and will enhance patient engagement in their disorder by allowing them to monitor their own lipid values, therapies, clinical outcomes, and quality of life.

The CASCADE FH Registry is sponsored by The FH Foundation that receives funding from a variety of sources. The Duke Clinical Research Institute serves as the academic

coordinating center and will develop and maintain the database and program and distribute the aforementioned annual data feedback reports. The CASCADE FH Registry protocol has been reviewed and approved by the Duke University Institutional Review Board and has been registered on www.clinicaltrials.gov (ID no. NCT01960244). In addition, all participating sites will be required to obtain institutional review board approval before commencing with data entry. The CASCADE FH Registry will be supervised and directed by an executive committee consisting of FH care providers, The FH Foundation representatives who are also patients, and Duke Clinical Research Institute representatives.

The research and creation of this manuscript were supported entirely by The FH Foundation. The authors are solely responsible for the design and conduct of this study, all study analyses, the drafting and editing of the manuscript, and its final contents.

Discussion

The Centers for Disease Control Office of Public Health Genomics recently categorized FH as a Tier 1 condition for cascade screening, with application of NICE clinical guidelines recommended as the highest level of evidence based on analytic validity and clinical utility.[24] As the only active US-based registry for FH, the CASCADE FH Registry aims to promote implementation of cascade screening, more timely disease identification, and optimal therapeutic management to improve the clinical outcomes and quality of life for all FH patients. The registry will specifically assess gaps in knowledge related to natural history, patient attitudes to a severe illness without clinical symptoms, and the potential benefit in life-years gained from effective treatment.

Over the past 2 decades, a number of population-based screening and research initiatives have made great strides in improving FH awareness and treatment. National or regional registries have been established in the Netherlands, Spain, the United Kingdom, Wales, Australia, Ireland, Norway, Brazil, and New Zealand, among others. The ongoing Dutch Lipid Clinic Network in the Netherlands has had the largest public health impact. Investigators there developed and validated a set of criteria using lipid values, genetic testing, physical signs and symptoms, and family history to determine FH diagnosis.[21] Since 1994, clinicians have used these criteria coupled with a national cascade screening effort to identify and diagnose individuals with suspected FH. Since its inception, the network has identified >30,000 FH cases in a highly cost-effective manner.

Another notable ongoing effort is The Simon Broome Register of Familial Hypercholesterolemia, which began recruiting patients at 21 specialized lipid clinics in the United Kingdom in 1980.[3] The Simon Broome Criteria use information on total and LDL cholesterol, physical signs, and family history to determine definite or probable FH status. Longitudinal data on vital status are collected using searches of the National Health Service Central Register. From 1980 to 2006, 3,382 patients were enrolled at 21 lipid clinics. The register reported a 25% decrease in excess coronary heart disease mortality over the study period for patients with existing coronary disease and a 48% decrease for those without, underscoring the importance of timely FH identification and early treatment.[25]

In the United States, the nonprofit humanitarian project MEDPED was established in 1989 to identify and treat patients affected by heritable cholesterol disorders, including FH. Using information on age, lipids, and genetic testing results, the project created and validated the MEDPED criteria to estimate the probability of FH.[11] Approximately 8,000 patients meeting MEDPED criteria for definite or probable FH were recruited from 1989 to 2004 and provided information on lipid levels, cardiovascular risk factors, and lipid-lowering therapies as well as FH status of first-degree relatives. However, because active recruitment to the MEDPED Registry ended in 2004, data on the contemporary patterns of FH treatment and outcomes in the United States are not available.

Existing registries have relied almost exclusively on identification of index patients by providers in specialty lipid clinics. Although this population is of great clinical interest, it encompasses only those patients with identified and treated FH and thus has limited potential for identifying undiagnosed patients. Although cascade screening of family members within ongoing registries has enhanced identification of undiagnosed patients, there is little opportunity for involvement of individuals who are not first-degree relatives of index cases and may be unaware of their own FH risk. The investment of time and resources required for establishing contact and systematically screening family members of those with FH may also be prohibitive for some clinics and providers. Largely due to these challenges, there has been increasing interest in exploring approaches to collecting high-quality, reliable longitudinal information directly from patients with FH. The CASCADE FH Registry aims to demonstrate the feasibility and scientific validity of conducting long-term follow-up through a patient-based, interactive, web-based system with validation of collected information from a subset of patient-entered records to data from the medical record. Insight and knowledge gained from this process will be broadly applicable to future studies aiming to enhance efficiency, reliability, and generalizability of longitudinal patient-reported data collection.

In 2010, the Patient Protection and Affordable Care Act highlighted the importance of identifying strategies to address "gaps in evidence in terms of clinical outcomes, practice variations, and health disparities in terms of delivery and outcomes of care… as well as patient needs,

outcomes, and preferences."[26] To date, few studies have attempted to characterize patterns of patient-reported outcomes among those affected by FH. A diagnosis of chronic disease is often associated with depression, anxiety, and reduced quality of life, all of which may in turn increase the risk for subsequent clinical events. The outcomes of greatest interest to patients and effective strategies to improve these outcomes have yet to be systematically defined or evaluated for FH, including perceptions of screening evaluation. The CASCADE FH will establish a framework for conducting comparative effectiveness research that expands traditional clinical end points to include outcomes of greatest interest to patients. These efforts will greatly contribute to our goal of better understanding and optimization of the FH patient experience.

Conclusions

The unique, innovative features of CASCADE FH will serve to both optimize the FH patient experience and to demonstrate the feasibility and benefit to patients of a large, well-designed registry. The CASCADE FH will use 2 complementary enrollment pathways to maximize inclusivity and create a sustainable model for comprehensive patient screening and identification of all FH patients who wish to participate. Because of the strong genetic component, FH as a disease state represents a unique opportunity to engage patients in the process of identifying, notifying, and educating relatives who are potentially at risk. As with many other health conditions, the lack of information on patient-reported outcomes in FH, including quality of life, disease-related anxiety, and depression, reflects the growing need to expand traditional research end points to more fully characterize the FH patient experience. Longitudinal data collection from patients represents an efficient method for tracking these and other long-term outcomes, with systematic medical record review to ensure validity of study findings. Knowledge and insight obtained from the data collection and validation processes will be vital to establishing rigorous methods for collecting high-quality, patient-reported data over time.

Disclosures

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Appendix

CASCADE FH Patient Questionnaire

A: Demographics

1. **Name**: _____ _____ _____
   First name *Middle Initial* *Last name*
2. **Address**: _____ _____ _____
   Street *city* *state*
3. **Phone**: (___) _____ - _____
4. **Email**: _____
5. **Date of Birth**: ___ /___ /_____
6. **Race**: ❑ Asian ❑ White ❑ American Indian/Alaska Native ❑ Black/African American ❑ Native Hawaiian/Pacific Islander ❑ Other
7. **Hispanic/Latino Ethnicity:** ❑ No ❑ Yes
8. **Sex:** ❑ Male ❑ Female ❑ Other
9. **Insurance Company**:
   ❑ Private Health Insurance ❑ Medicaid ❑ Medicare ❑ Veterans Administration/Department of Defense
   ❑ No Insurance ❑ Other

B: Past Medical History

10. **Have you ever been told you have:**
    - Hypertension (High Blood Pressure): ❑No ❑Yes ❑Unknown
    - Hyperthyroidism (High Thyroid): ❑No ❑Yes ❑Unknown
    - Hypothyroidism (Low Thyroid): ❑No ❑Yes ❑Unknown
    - Diabetes (High Blood Sugar): ❑No ❑Yes ❑Unknown
    - Congestive Heart Failure (CHF): ❑No ❑Yes ❑Unknown
    - Myocardial Infarction (Heart Attack): ❑No ❑Yes ❑Unknown
      - ➥If yes, How old were you when you were first diagnosed?_____ Age ❑Unknown
    - Confirmed Stroke with symptoms lasting > 24 hours: ❑No ❑Yes ❑Unknown
      - ➥If yes, How old were you when you were first diagnosed?_____ Age ❑Unknown
    - Transient Ischemic Attack (Suspected stroke or symptoms resolved in less than 24 hours): ❑No ❑Yes ❑Unknown
      - ➥If yes, How old were you when you were first diagnosed?_____ Age ❑Unknown
11. **Have you had any of the following imaging procedures done in the last 5 years?**
    - Cardiac Stress Test (Treadmill or Imaging): ❑No ❑Yes ❑Unknown
    - Coronary Angiography or Coronary CT Angiography: ❑No ❑Yes ❑Unknown
    - Coronary/Carotid CT Calcium Scan: ❑No ❑Yes ❑Unknown
    - Peripheral Angiogram: ❑No ❑Yes ❑Unknown

CASCADE FH Patient Questionnaire

12. Have you ever had any of the follow procedures performed?

- Heart Bypass Operation (CABG): ❑No ❑Yes ❑Unknown
  - ➥If yes, How old were you when you first had this surgery? _____ Age ❑Unknown
- Coronary Stent Placement: ❑No ❑Yes ❑Unknown
  - ➥If yes, How old were you when you first had this procedure? _____ Age ❑Unknown
- Procedure to unblock arteries in the legs (Peripheral Revascularization): ❑No ❑Yes ❑Unknown
  - ➥If yes, How old were you when you first had this procedure? _____ Age ❑Unknown

13. Have you ever been a smoker: ❑No ❑Yes

- ➥**If yes**, Are you still smoking? ❑ Yes ❑ No

C: Family FH History

14. Do you have a family member who is participating in the CASCADE-FH Registry? ❑Yes ❑No ❑Unsure

15. Did you know that FH can be passed down in families? ❑Yes ❑No

16. In addition to your parents, how many immediate family members do you have?

_____brother(s),_____ sister(s),_____ children

17. Do any of your immediate family member(s) (parent(s), sibling, or children) have high cholesterol? ❑Yes ❑No ❑Unsure

- ➥If yes, How many family members have high cholesterol? _____ and _____ age(s) ❑Unknown

18. Do any immediate family member(s) (parent(s), sibling or children) have FH? ❑Yes ❑No ❑Unsure

- ➥If yes, How many family members have FH? _____ and _____ age(s) ❑Unknown

19. Are you aware of a family history of heart attack, stroke, heart surgery (either your mother's or father's side) before the age of 60? ❑Yes ❑No ❑Unsure

20. Have you had your child/children's cholesterol levels checked? ❑Yes ❑No ❑Do not have children ❑Unknown

21. Do any immediate family member(s) (parent, sibling or children has a history of Xanthoma? ❑Yes ❑No ❑Unknown

22. Do any immediate family member(s) (parent, sibling or children has a history of Arcus? ❑Yes ❑No ❑Unknown

23. Do any immediate family member(s) (parent, sibling or children has a history of Heart Disease? ❑Yes ❑No ❑Unknown

24. Do any immediate family member(s) (parent, sibling or children has a history of Peripheral Vascular Disease? ❑Yes ❑No ❑Unknown

D: Patient FH History

25. Has a healthcare provider diagnosed you with Familial Hypercholesterolemia (FH)? ❑No ❑Yes ❑Unknown

- ➥**If yes**, What type of provider diagnosed you?
  ❑Cardiologist ❑Dermatologist ❑Internist/family doctor ❑Lipid Specialist ❑Neurologist ❑OB/Gyn ❑Ophthalmologist ❑Pediatrician ❑Primary care physician ❑Other,
- ➥**If yes**, How old were you when diagnosed? _____ Age ❑Unknown
- ➥**If yes**, Did the diagnosis include genetic testing? ❑No ❑Yes ❑Unknown
  - ➥If yes, ❑LDL receptor gene ❑APO lipoprotein B-100 ❑PCSK9
- ➥**If yes**, Are you aware of your FH diagnosis type?
  ❑Heterozygous ❑Homozygous ❑Compound Heterozygous ❑Unknown

CASCADE FH Patient Questionnaire

D: Patient FH History

26. Who is currently treating you for FH?

❑Cardiologist ❑Dermatologist ❑Internist/Family Practitioner ❑Lipid Specialist ❑Neurologist ❑OB/Gyn ❑Ophthalmologist ❑Pediatrician ❑Primary Care Physician ❑Other

27. When were you diagnosed with high cholesterol? _____ Age ❑Unknown

28. What was your highest LDL and Total Cholesterol prior to treatment?

- LDL: _____ mg/dl, **Date**: MM/DD/YEAR ❑Approximate ❑Unknown
- Total Cholesterol: _____ mg/dl, **Date**: MM/DD/YEAR ❑Approximate ❑Unknown

29. Have you ever been told you have Xanthomas (picture/explanation)? ❑No ❑Yes ❑Unknown

30. Have you even been told you have Xanthelasmas (picture/explanation)? ❑No ❑Yes ❑Unknown

31. Have you even been told you have Corneal Acrus (picture/explanation)? ❑No ❑Yes ❑Unknown

E: Treatments for FH

32. Have you tried diet, exercise, and/or alternative medicines?: ❑No ❑Yes

33. Have you ever used cholesterol-lowering medication and/or apheresis? ❑No ❑Yes ❑Unknown

34. Which of the following treatments are you currently taking?

Medication Name	Currently taking?	IF not currently taking, why?	Which medications are you taking?	What is the dose?	How often do you take the medication?
Statin	❑No ❑Yes ❑Unknown	❑Allergy ❑Intolerance ❑Never prescribed ❑Personal Preference ❑Physician Preference ❑Cost ❑Pregnancy ❑Clinical Trial ❑Current therapy	❑Lovastatin (Altocor, Altoprev, Mevacor)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Fluvastatin (Lescol, Lescol XL)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Pravastatin (Pravachol)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Pitavastatin (Livalo)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Atorvastatin (Lipitor)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Rosuvastatin (Crestor)	_____ ❑Unknown	❑Daily ❑Less than Daily
			❑Simvastatin (Zocor)	_____ ❑Unknown	❑Daily ❑Less than Daily
Fibrate	❑No ❑Yes ❑Unknown				

CASCADE FH Patient Questionnaire

Medication Name	Currently taking?	IF not currently taking, why?	Which medications are you taking?	What is the dose?	How often do you take the medication?
Ezetimibe	❑No ❑Yes ❑Unknown				
Bile Acid Sequestrants	❑No ❑Yes ❑Unknown				
Niacin	❑No ❑Yes ❑Unknown				
Phytosterols	❑No ❑Yes ❑Unknown				
Fish Oils/Omega 3 Fatty Acids	❑No ❑Yes ❑Unknown				
PCSK9 Inhibitors	*❑No ❑Yes ❑Unknown*				
Lomitapide (Juxtapid)	❑ No ❑Yes ❑Unknown				
Mipomersen (Kvnamro)	❑ No ❑Yes				
Psyllium	❑ No ❑Yes ❑Unknown				
LDL Apheresis	❑ No ❑Yes ❑Unknown	❑No apheresis center nearby ❑Personal Preference ❑Concomitant ACE Inhibitor Use ❑Physician did not recommend ❑Too time consuming ❑Cost ❑Current therapy effective ❑Not aware of this therapy ❑Don't know ❑Other reason not listed			

CASCADE FH Patient Questionnaire

F: Most Recent Exam & Laboratory Data

35. Do you have any signs or symptoms of heart disease? ❑No ❑Yes

- ➥If yes, ❑Shortness of breath
  ❑Chest pain

36. Blood Pressure (mmHg): _____ / _____ ❑Unknown

37. Height: _____ feet, _____ inches, **Date**: MM/YY/YEAR

38. Weight: _____ pounds, **Date**: MM/YY/YEAR

39. Total Cholesterol: _____ mg/dL, **Date**: MM/YY/YEAR ❑Approximate

40. LDL: _____ mg/dL, **Date**: MM/YY/YEAR ❑Approximate

G: Clinical Trial Participation

41. Are you currently in a clinical trial for the treatment of FH? ❑No ❑Yes

H: Health Care Provider Treating FH

42. Physician Name: _____ _____
First Name *Last Name*

43. Address: _____ _____ _____
Street *city* *State*

44. Phone: (_____) _____ - _____

45. Fax: (_____) _____ - _____

46. Do you have a separate lipid specialist? ❑No ❑Yes

- ➥**If yes**, please record contact information below
- Physician Name: _____ _____
- Address: _____ _____ _____
- Phone: (_____) _____ - _____
- Fax: (_____) _____ - _____

CASCADE FH Patient Questionnaire

I: Quality of Life

47. How satisfied are you that everything possible is being done to treat your FH?

Not satisfied at all	Mostly dissatisfied	Somewhat dissatisfied	Mostly satisfied	Highly satisfied
❑	❑	❑	❑	❑

48. Over the past year, how much has your FH interfered with or limited your enjoyment of life?

Severely limited	Moderately limited	Slightly limited	Barely limited	Not at all limited
❑	❑	❑	❑	❑

49. How often do you worry that you may have a heart attack or die suddenly?

I can't stop worrying about it	I often worry about it	I occasionally worry about it	I rarely worry about it	I never worry about it
❑	❑	❑	❑	❑

50. How often do you worry about your children's risk of disease related to FH?

I can't stop worrying about it	I often worry about it	I occasionally worry about it	I rarely worry about it	I never worry about it
❑	❑	❑	❑	❑

51. Have your feelings about the future changed since before your FH diagnosis?

Much worse than before	Slightly worse than before	No change	Slightly better than before	Significantly better than before
❑	❑	❑	❑	❑

CASCADE FH Patient Questionnaire

J: FH Understanding

	Do not at all understand	Mostly do not understand	Somewhat understand	Mostly understand	Completely understand
52. How FH can negatively affect my health	❑	❑	❑	❑	❑
53. My current medication regimen (dosing, type, side effects, etc.)	❑	❑	❑	❑	❑
54. My available treatment options for FH	❑	❑	❑	❑	❑
55. My personal risk for events like heart attack and stroke	❑	❑	❑	❑	❑
56. Why FH screening of my family members is important	❑	❑	❑	❑	❑
57. How FH increases risk of heart disease	❑	❑	❑	❑	❑
58. Where I can go to get more information about FH	❑	❑	❑	❑	❑

CASCADE FH

BASELINE DATA COLLECTION FORM Site #: _____ Patient ID: _____

SECTION A: DEMOGRAPHICS

Patient	**Last Name**:	*Maiden Name:*	**First Name**:	**DOB:**	__ __/__ __/__ __ __ *mm dd yyyy*
	Street Address:		**City:**	**State:**	**Zip:**
	Check Preferred Method of Contact	**Home Phone:** ❑	**Cell Phone:** ❑	**Email:** ❑	
Next of Kin	**Last Name**:		**First Name:**		
	Street Address:		**City:**	**State:**	**Zip:**
	Check Preferred Method of Contact	**Home Phone:** ❑	**Cell Phone:** ❑	**Email:** ❑	

Date patient signed ICF : __ __/__ __/__ __ __ __ *mm dd yyyy*

Race (self-reported): (*check all that apply*)
❑Asian ❑White ❑American Indian/Alaska Native ❑Other
❑Black/African American ❑Native Hawaiian/Pacific Islander

Hispanic/Latino Ethnicity: ❑No ❑Yes **Sex:** ❑Male ❑Female

Payor and Insurance Status: (*check all that apply*)
❑Private Health Insurance ❑Medicaid ❑Medicare ❑No Insurance
❑Veterans Administration/Department of Defense ❑Other

SECTION B: PAST MEDICAL HISTORY

Smoking History:	❑No ❑Yes	➥**If yes**, ❑Current ❑Former		
Hypertension	❑No ❑Yes			
Thyroid Disease:	❑No ❑Yes	➥**If yes**, ❑Hyperthyroidism ❑Hypothyroidism		
Diabetes:	❑No ❑Yes	➥**If yes**, year ***or*** age of onset:	_____ *yyyy*	_____ *age*
Prior MI:	❑No ❑Yes	➥**If yes**, year ***or*** age of first MI:	_____ *yyyy*	_____ *age*
Prior Stroke:	❑No ❑Yes	➥**If yes**, year ***or*** age of first Stroke:	_____ *yyyy*	_____ *age*
Prior TIA:	❑No ❑Yes	➥**If yes**, year ***or*** age of first TIA:	_____ *yyyy*	_____ *age*
Prior CABG:	❑No ❑Yes	➥**If yes**, year ***or*** age of first CABG:	_____ *yyyy*	_____ *age*
Prior PCI or Stent:	❑No ❑Yes	➥**If yes**, year ***or*** age of first PCI:	_____ *yyyy*	_____ *age*
Prior Peripheral Revascularization:	❑No ❑Yes	➥**If yes**, year ***or*** age of first Peripheral Revascularization:	_____ *yyyy*	_____ *age*
Prior Heart Failure:	❑No ❑Yes	➥**If yes**, year ***or*** age of first Heart Failure:	_____ *yyyy*	_____ *age*

CASCADE FH

BASELINE DATA COLLECTION FORM Site #:_____ Patient ID: _____

SECTION C: FAMILY FH HISTORY

Family History of FH:	❑No ❑Yes	➥ **If yes**, FH Diagnosis Type: ❑Heterozygous ❑Homozygous ❑Compound Heterozygous
Family History of Hypercholesterolemia:	❑No ❑Yes	
Family History of premature MI (men/women < 60):	❑No ❑Yes	
Family History of Xanthoma:	❑No ❑Yes	
Family History of PVD:	❑No ❑Yes	
Family History of Arcus:	❑No ❑Yes	

SECTION D: PATIENT FH HISTORY

FH Diagnosis Type: ❑Heterozygous ❑Homozygous ❑Compound Heterozygous

Method of diagnosis: *(select all)*
❑Dutch Lipid
❑Simon Broome
❑MedPed
❑Other
❑Genetic mutation (DNA testing) ➥ Confirmed FH mutation: ❑No ❑Yes
➥ **If yes**, check all that apply:
❑Mutation in LDL receptor gene
❑Apo lipoprotein B-100
❑Mutations in PCSK9

Year **or** Age of diagnosis: _____ *yyyy* _____ *age*

Highest pre-treatment LDL: _____ *yyyy* ***or*** _____ *age* _____ *Level* mg/dL ❑N/A

Highest pre-treatment TC: _____ *yyyy* ***or*** _____ *age* _____ *Level* mg/dL ❑N/A

Has patient ever been treated with lipid lowering medication: ❑No ❑Yes ➥**If yes**, Year ***or*** Age first prescribed: _____ *yyyy* _____ *age*

SECTION E: PHYSICAL EXAMINATION FINDINGS

Height:_____ / **Weight**:_____ ***or*** **BMI** _____ **Blood Pressure (mmHg):** ___/___

Corneal Arcus	❑No	❑Yes	❑Not Assessed
Tendon Xanthomas	❑No	❑Yes	❑Not Assessed
Xanthelasmas	❑No	❑Yes	❑Not Assessed

Tanner Stage
❑No ❑Yes ❑Not Available
➥**If yes**, select stage: ❑1 ❑2 ❑3 ❑4
➥ Date of Assessment: __ __/__ __/__ __ __ __ *mm dd yyyy*

Menarche
❑No ❑Yes ❑Not Available
➥**If yes**, age at first onset: _____ *age*

CASCADE FH

BASELINE DATA COLLECTION FORM Site #: _____ Patient ID: _____

SECTION F: CURRENT LIPID LOWERING THERAPIES *(Check all that apply)*

Statin	❑No ➥**If No**, select reason: ❑Allergy ❑Intolerance ❑Patient Preference ❑Physician Preference ❑Cost ❑Pregnancy ❑Clinical Trial ❑Other	❑Yes ➥**If yes**, select all medications, indicate dose and frequency:		
		Medication	**Dose**	**Frequency**
		❑Lovastatin (Altocor, Altoprev, Mevacor)	_____	❑Daily ❑Less than Daily
		❑Fluvastatin (Lescol, Lescol XL)	_____	❑Daily ❑Less than Daily
		❑Pravastatin (Pravachol)	_____	❑Daily ❑Less than Daily
		❑Pitavastatin (Livalo)	_____	❑Daily ❑Less than Daily
		❑Atorvastatin (Lipitor)	_____	❑Daily ❑Less than Daily
		❑Rosuvastatin (Crestor)	_____	❑Daily ❑Less than Daily
		❑Simvastatin (Zocor)	_____	❑Daily ❑Less than Daily
Fibrate	❑No ❑Yes			
Ezetimibe	❑No ❑Yes			
Bile Acid Sequestrants	❑No ❑Yes			
Niacin	❑No ❑Yes			
Phytosterols	❑No ❑Yes			
Fish Oils/Omega 3 Fatty Acids	❑No ❑Yes			
PCSK9 Inhibitors	*❑No ❑Yes*			
Lomitapide (Juxtapid)	❑No ❑Yes			
Mipomersen (Kvnamro)	❑No ❑Yes			
Psyllium	❑No ❑Yes			
LDL Apheresis	❑No ❑Yes ➥**If No**, select reason: ❑No apheresis center nearby ❑Patient Preference ❑Concomitant ACE Inhibitor Use ❑Physician did not recommend ❑Too time consuming ❑Cost			

SECTION G: IMAGING /PROCEDURES *(Within past 5 years)*

Stress test (with or without imaging)	❑No ❑Yes
Coronary Angiography or Coronary CT Angiography	❑No ❑Yes
Coronary/Carotid CT Calcium Scan	❑No ❑Yes
Peripheral Angiogram	❑No ❑Yes

SECTION H: LABORATORY DATA *(Most recent result if known)*

TC:	____ mg/dL	❑N/A	**ALT:**	____ units/L	❑N/A
LDL:	____ mg/dL	❑N/A	**Creatinine:**	____ mg/dL	❑N/A
TG:	____ mg/dL	❑N/A	**Fasting Blood Glucose:**	____ mg/dL	❑N/A
HDL:	____mg/dL	❑N/A	**HbA1c:**	____ g/dL	❑N/A
Lpa:	____ mg/dL	❑N/A	**TSH:**	____ mIU/L	❑N/A
AST:	____ units/L	❑N/A			

SECTION I: CLINICAL TRIAL PARTICIPATION

Is the patient currently in a clinical trial for the treatment of FH?	❑No ❑Yes

CASCADE FH 6 Month Follow-up Patient Questionnaire

A: Demographics

1. **Name**: _____ _____ _____
   First name *Middle Initial* *Last name*
2. **Address**: _____ _____ _____
   Street *city* *state*
3. **Phone**: (___) _____-_____
4. **Email**: _____
5. **Date of Birth**: ___ /___ /_____

B: Procedures/Events

6. **Has any of the following medical events occurred in the past 6 months:**
   - Myocardial Infarction (Heart Attack): ❑No ❑Yes ❑Unknown
     - ⮑If yes, When did this occur?_____ date
   - Confirmed Stroke with symptoms lasting > 24 hours: ❑No ❑Yes ❑Unknown
     - ⮑If yes, When did this occur?_____ date
   - Transient Ischemic Attack (Suspected stroke or symptoms resolved in less than 24 hours): ❑No ❑Yes ❑Unknown
     - ⮑If yes, ⮑If yes, When did this occur?_____ date
7. **Have you ever had any of the follow medical procedures performed in the past 6 months?**
   - Coronary Bypass Surgery: ❑No ❑Yes ❑Unknown
     - ⮑If yes, What was the date of this surgery?_____ date
   - Coronary Stent Placement: ❑No ❑Yes ❑Unknown
     - ⮑If yes, What was the date of this procedure?_____ date
8. **Were you admitted to the hospital for any other reason in the past 6 months?:** ❑No ❑Yes ❑Unknown
   - ⮑**If yes**, What was the date of this hospitalization? _____date

C: Family FH History

9. **Have other family members been screened for FH in the past 6 months?** ❑No ❑Yes ❑Unknown
   - If Yes, Do you know if they have been diagnosed with FH? ❑No ❑Yes ❑Unknown
   - If Yes, Do you know if they are participating in the CASCADE-FH Registry? ❑No ❑Yes ❑Unknown

D: Genetic Testing

10. **Have you undergone genetic testing (DNA Testing) in the past 6 months?** ❑No ❑Yes ❑Unknown
    - ⮑**If yes**, Was there a confirmed genetic mutation? ❑No ❑Yes ❑Unknown
      - ⮑If yes, ❑LDL receptor gene ❑APO lipoprotein B-100 ❑PCSK9
    - ⮑**If yes**, Are you aware of your FH diagnosis type?
      ❑Heterozygous ❑Homozygous ❑Compound Heterozygous ❑Unknown

CASCADE FH 6 Month Follow-up Patient Questionnaire

E: Treatments for FH

Please collect your medication bottles or have a list of your medications in front of you before answering the next series of questions.

11. Are you on a special diet/taking alternative medicine and/or exercising: ❑No ❑Yes

12. Are you currently taking cholesterol-lowering medication and/or apheresis? ❑No ❑Yes ❑Unknown

- ➥If yes, please answer the following questions related to the medications you are currently taking.

Medication Name	Currently taking?	IF not currently taking, why?	Which medications are you taking?	What is the dose?	How often do you take the medication?
Statin	❑No ❑Yes ❑Unknown	❑Allergy ❑Intolerance ❑Never prescribed ❑Personal Preference ❑Physician Preference ❑Cost ❑Pregnancy ❑Clinical Trial ❑Current therapy	❑Lovastatin (Altocor, Altoprev, Mevacor)	_____	❑Daily ❑Less than Daily
			❑Fluvastatin (Lescol, Lescol XL)	_____	❑Daily ❑Less than Daily
			❑Pravastatin (Pravachol)	_____	❑Daily ❑Less than Daily
			❑Pitavastatin (Livalo)	_____	❑Daily ❑Less than Daily
			❑Atorvastatin (Lipitor)	_____	❑Daily ❑Less than Daily
			❑Rosuvastatin (Crestor)	_____	❑Daily ❑Less than Daily
			❑Simvastatin (Zocor)	_____	❑Daily ❑Less than Daily
Fibrate	❑No ❑Yes ❑Unknown				
Ezetimibe	❑No ❑Yes ❑Unknown				
Bile Acid Sequestrants	❑No ❑Yes ❑Unknown				
Niacin	❑No ❑Yes ❑Unknown				
Phytosterols	❑No ❑Yes ❑Unknown				
Fish Oils/Omega 3 Fatty Acids	❑No ❑Yes ❑Unknown				
PCSK9 Inhibitors	❑*No* ❑*Yes* ❑*Unknown*				
Lomitapide (Juxtapid)	❑ No ❑Yes ❑Unknown				
Mipomersen (Kvnamro)	❑ No ❑Yes				

CASCADE FH 6 Month Follow-up Patient Questionnaire

Medication Name	Currently taking?	IF not currently taking, why?	Which medications are you taking?	What is the dose?	How often do you take the medication?
Psyllium	❑ No ❑Yes ❑Unknown				
LDL Apheresis	❑ No ❑Yes ❑Unknown	❑No apheresis center nearby ❑Personal Preference ❑Concomitant ACE Inhibitor Use ❑Physician did not recommend ❑Too time consuming ❑Cost ❑Current therapy effective ❑Not aware of this therapy ❑Don't know ❑Other reason not listed			

F: Most Recent Exam & Laboratory Data

13. Total Cholesterol: _____ mg/dL, **Date**: MM/YY/YEAR
14. LDL: _____ mg/dL, **Date**: MM/YY/YEAR
15. Tryiglycerides: _____ mg/dL, **Date**: MM/YY/YEAR
16. HDL: _____ mg/dL, **Date**: MM/YY/YEAR

G: Clinical Trial Participation

17. Are you currently in a clinical trial for the treatment of FH? ❑No ❑Yes

- ➥**If No**, Would you be interested in receiving more information regarding current and upcoming clinical trials? ❑No ❑Yes

CASCADE FH 6 Month Follow-up Patient Questionnaire

H: Health Care Provider Treating FH

18. Physician Name: _____ _____
First Name *Last Name*

19. Address: _____ _____ _____
Street *city* *State*

20. Phone: (_____) _____ - _____

21. Fax: (_____) _____ - _____

22. Do you have a separate lipid specialist? ❑No ❑Yes

- ➥**If yes**, please record contact information below
- Physician Name: _____ _____
- Address: _____ _____ _____
- Phone: (_____) _____ - _____
- Fax: (_____) _____ - _____

I: Quality of Life

23. How satisfied are you that everything possible is being done to treat your FH?

Not satisfied at all	Mostly dissatisfied	Somewhat dissatisfied	Mostly satisfied	Highly satisfied
❑	❑	❑	❑	❑

24. Over the past year, how much has your FH interfered with or limited your enjoyment of life?

Severely limited	Moderately limited	Slightly limited	Barely limited	Not at all limited
❑	❑	❑	❑	❑

25. How often do you worry that you may have a heart attack or die suddenly?

I can't stop worrying about it	I often worry about it	I occasionally worry about it	I rarely worry about it	I never worry about it
❑	❑	❑	❑	❑

26. How often do you worry about your children's risk of disease related to FH?

I can't stop worrying about it	I often worry about it	I occasionally worry about it	I rarely worry about it	I never worry about it
❑	❑	❑	❑	❑

27. Have your feelings about the future changed since before your FH diagnosis?

Much worse than before	Slightly worse than before	No change	Slightly better than before	Significantly better than before
❑	❑	❑	❑	❑

CASCADE FH 6 Month Follow-up Patient Questionnaire

J: FH Understanding

	Do not at all understand	Mostly do not understand	Somewhat understand	Mostly understand	Completely understand
28. How FH can negatively affect my health	❑	❑	❑	❑	❑
29. My current medication regimen (dosing, type, side effects, etc.)	❑	❑	❑	❑	❑
30. My available treatment options for FH	❑	❑	❑	❑	❑
31. My personal risk for events like heart attack and stroke	❑	❑	❑	❑	❑
32. Why FH screening of my family members is important	❑	❑	❑	❑	❑
33. How FH increases risk of heart disease	❑	❑	❑	❑	❑
34. Where I can go to get increased information about FH	❑	❑	❑	❑	❑

CASCADE FH

SITE 6 MONTH FOLLOW-UP DATA COLLECTION FORM Site #: _____ Patient ID: _____

SECTION A: DEMOGRAPHICS

Patient	**Last Name**:	*Maiden Name:*	**First Name**:	**DOB:**	__ __/__ __/__ __ __ __ *mm dd yyyy*
	Has address or contact information changed since last data entry? ❑No ❑Yes				
	If yes: Street Address:		**City:**	**State:**	**Zip:**
	Check Preferred Method of Contact	**Home Phone:** ❑	**Cell Phone:** ❑	**Email:** ❑	

SECTION B: PROCEDURES/ EVENTS SINCE LAST ENTRY

Event		**Date**
MI	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*
Stroke	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*
TIA	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*
CABG	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*
PCI or Stent	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*
Hospitalization for other reason	❑No ❑Yes	_____ /_____/ _____ *mm dd yyyy*

SECTION C: GENETIC TESTING

Have the patient undergone testing for FH genetic mutation (DNA testing) since last data entry?	❑ No ❑Yes ➥**If yes**, Confirmed FH mutation: ❑No ❑Yes ➥**If yes**, check all that apply: ❑ Mutation in LDL receptor gene ❑ Apo lipoprotein B-100 ❑ Mutations in PCSK9

SECTION D: CURRENT LIPID LOWERING THERAPIES *(Check all that apply)*

Statin

❑No ❑Discontinued since last entry

➥**If discontinued**, select reason:

❑Allergy
❑Intolerance
❑Patient Preference
❑Physician Preference
❑Cost
❑Pregnancy
❑Clinical Trial
❑Other

❑Yes
➥**If yes**, select all medications, indicate dose and frequency:

Medication	**Dose**	**Frequency**
❑Lovastatin (Altocor, Altoprev, Mevacor)	_____	❑Daily ❑Less than Daily
❑Fluvastatin (Lescol, Lescol XL)	_____	❑Daily ❑Less than Daily
❑Pravastatin (Pravachol)	_____	❑Daily ❑Less than Daily
❑Pitavastatin (Livalo)	_____	❑Daily ❑Less than Daily
❑Atorvastatin (Lipitor)	_____	❑Daily ❑Less than Daily
❑Rosuvastatin (Crestor)	_____	❑Daily ❑Less than Daily
❑Simvastatin (Zocor)	_____	❑Daily ❑Less than Daily

CASCADE FH

SITE 6 MONTH FOLLOW-UP DATA COLLECTION FORM Site #: _____ Patient ID: _____

SECTION E: CURRENT LIPID LOWERING THERAPIES *(Check all that apply)*		
Medication	**Administered**	**If discontinued, reason for discontinuation:**
Fibrate	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
Ezetimibe	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
Bile Acid Sequestrants	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
Niacin	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
Phytosterols	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
Fish Oils/Omega 3 Fatty Acids	❑No ❑Yes ❑Discontinued since last entry	❑Allergy ❑Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑Clinical Trial ❑Other
PCSK9 Inhibitors	❑No ❑Yes ❑Discontinued since last entry	❑ Allergy ❑ Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑ Clinical Trial ❑Other
Lomitapide (Juxtapid)	❑No ❑Yes ❑Discontinued since last entry	❑ Allergy ❑ Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑ Clinical Trial ❑Other
Mipomersen (Kvnamro)	❑No ❑Yes ❑Discontinued since last entry	❑ Allergy ❑ Intolerance ❑ Patient Preference ❑ Physician Preference ❑ Cost ❑Pregnancy ❑ Clinical Trial ❑Other
LDL Apheresis	❑No ❑Yes ❑Discontinued since last entry	❑ No apheresis center nearby ❑ Patient Preference ❑ Concomitant ACE Inhibitor Use ❑ Physician did not recommend ❑Too time consuming ❑ Cost

SECTION F: LABORATORY DATA (MOST RECENT RESULT IF KNOWN)			
TC:	____ mg/dL	**AST:**	____ units/L
LDL:	____ mg/dL	**ALT:**	____ units/L
TG:	____ mg/dL	**Total bilirubin:**	____ mg/dL
VLDL:	____ mg/dL	**Creatinine:**	____ mg/dL
HDL:	____mg/dL	**Fasting Blood Glucose:**	____ mg/dL
Lpa:	____ mg/dL	**HbA1c:**	____ g/dL
hsCRP:	____ mg/L	**TSH:**	____ mIU/L
Total CK:	____ units/L	**Hcy**	____µmol/L