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PRN OPINION PAPER

Clinical review and role of clinical pharmacists in obesity management: An opinion of the endocrine and metabolism practice and research network of the American College of Clinical Pharmacy

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Abstract

The objective of this practice and research network opinion paper was to identify literature for pharmacist-led services with obesity management, summarize clinical evidence for this disease state, and describe the role of a clinical pharmacist among patients who are overweight or have obesity. Clinical pharmacists play a critical role in the safe and effective management of obesity in both the inpatient and outpatient settings. In an outpatient setting, the role of the clinical pharmacist includes a comprehensive patient interview to design an individualized therapeutic plan involving nonpharmacological interventions with or without pharmacological interventions or surgical options. A clinical pharmacist conducts a risk-benefit analysis for pharmacological interventions. Furthermore, the potential of medications to contribute to weight gain or prevent weight loss can be reviewed by a clinical pharmacist when managing comorbid conditions. In an inpatient setting, a clinical pharmacist conducts medication reconciliation, determines appropriate supplements for nutritional deficiencies, and provides medication management for people with obesity who may or may not be undergoing bariatric surgery. In addition, a clinical pharmacist can provide thorough patient education with monitoring for transitions from hospital to the outpatient setting and subsequent follow-up visits.

KEYWORDS
inpatients, obesity, outpatients, overweight, pharmacists

1 | INTRODUCTION

Trends in prevalence of adult obesity have been long evaluated through various national and international organizations.[1–3] Although the design of each investigation varies, all have similar conclusions:

This paper represents the opinion of the Endocrine and Metabolism Practice and Research Network of the American College of Clinical Pharmacy. It does not necessarily represent an official ACCP commentary, guideline, or statement of policy or position.

the global weight, including that of Americans, continues to increase annually.[1,2,4,5] By the year 2030, it is projected that approximately 50% of adults in the United States population will be classified as obese, with 25% being categorized as severely obese.[6–8] A recent analysis suggests that severe (or class 2) obesity (defined as a body mass index [BMI] ≥35 kg/m^2) will be the most common body mass classification category among women, non-Hispanic black adults, and low-income adults.[6] Evidence also indicates the lowest mortality corresponds with a BMI of 25 kg/m^2, and rises both as BMI increases above or decreases below 25 kg/m^2.[9]

With trends projecting significant increases in obesity rates, so will associated comorbid disease states and the financial implications on society. Rates of type 2 diabetes (T2DM), heart disease, stroke, hypertension, dyslipidemia, and cancer along with all-cause mortality, will climb as a direct influence of increasing obesity prevalence.[7,10] Prevalence of other coinciding complications will also grow, including gallbladder disease, osteoarthritis, sleep apnea, cancer (specifically colorectal and breast), depression, anxiety, difficulty with physical functioning, and diminished quality of life.[10] Medical costs associated with treating obesity and associated comorbid diseases are estimated to increase by $48-66 billion/year in the United States by the year 2030.[7]

In 2013, the American Medical Association for the first time designated obesity as a diagnosable chronic disease.[11] However, health care professionals are viewed as being poorly trained to adequately address obesity.[12] Health professional students are provided little direct education regarding obesity treatment.[12] Likely as a result, less than 25% of physicians feel sufficiently trained to counsel patients about healthy eating or physical activity.[13] In light of the anticipated growth in obesity rates, it is now more important than ever to ensure the health care workforce is appropriately equipped to address this growing national problem. Clinical pharmacists have unique skill sets and training to provide significant contributions related to weight management for patients.

2 | CLINICAL PHARMACISTS' INTERVENTION IN THE LITERATURE

A literature search was conducted to identify pharmacist-engaged obesity initiatives from January 2010 to October 2020. Using PubMed, Semantic Scholar, and Google Scholar, the following terms were used: pharmacist-led AND obesity services; pharmacist AND obesity AND weight management; pharmacist-led obesity services; pharmacist-led weight management; pharmacist-engaged obesity services; pharmacist-engaged weight management; pharmacists and weight loss; pharmacists and healthy lifestyle; pharmacy obesity initiative. Seventeen articles were obtained and summarized (Table 1).[14–30] In the past 10 years, most of the literature on pharmacy-led obesity management comes from community pharmacy initiatives worldwide (U.S., U.K., Spain, Australia, and Thailand) to implement weight-loss or weight-management programs as a service to the community. Most of the interventions used were pre/post studies to determine the effect of the pharmacist-led service. Few of the studies involved randomized controlled trials, instead often using surveys or protocol reviews to assess both pharmacists' and patients' knowledge, perspectives, and opinions of these services. For the studies that demonstrated efficacy of interventions, the weight loss ranged from 1.54 to 6.44 kg, and the waist circumference reduction ranged from 2.0 cm to 6.35 cm over a period of 6 months to 2 years. Overall, these studies revealed an improvement in patient outcomes, knowledge, and perspectives on weight loss when participating in a pharmacist-led initiative. However, the literature search did indicate lack of evidence in specific settings, such as inpatient and transitions of care, of clinical pharmacists in obesity management.

It is for this reason that the Endocrine and Metabolism Practice and Research Network (PRN), a focused group of American College of Clinical Pharmacy (ACCP) members, convened an independent committee to specifically summarize evidence related to obesity management and articulate the rationale for clinical pharmacists to be included as a team member in the prevention, management, and treatment of obesity in adults. The independent committee, which was approved by the PRN leadership, consisted of clinical pharmacists and clinical pharmacy specialists in the area of obesity management. This manuscript was reviewed by the group leadership, an independent group in the PRN as expert reviewers, and other members of the ACCP leadership. This article is a collective opinion of the Endocrine and Metabolism PRN regarding clinical evidence, including best practices and recommendations for clinical pharmacists in obesity management of adults for the outpatient and inpatient settings.

3 | CLINICAL PHARMACISTS' ROLE IN OBESITY MANAGEMENT

3.1 | Patient interview

The Joint Commission of Pharmacy Practitioners Pharmacists' Patient Care Process is described as the process used by any pharmacist, in any practice setting where patient care is being delivered.[31] In addition, comprehensive medication management is a systematic approach to develop an individualized, patient-centered therapeutic plan to optimize outcomes.[32] The patient care process, with focus on comprehensive medication management, relies on the collection and assessment of information, developing and implementing a plan and following-up to ensure the plan is monitored and evaluated. Clinical pharmacists are accessible health care professionals and can utilize the patient care process to address obesity management and obesity-related diseases in the outpatient setting by conducting a thorough assessment (Table 2) and developing a more personalized treatment plan.[33,34] Additionally, clinical pharmacists can discuss the implications of being overweight and the relationship of obesity with all eligible patients at every encounter to make a meaningful impact toward success.[35]

TABLE 1 Summary of pharmacist-engaged obesity initiatives[14–30]

Author	Design	Intervention	# Participants (n)	Patient outcome
Boardman et al.[14]	6-month, retrospective data analysis	Community pharmacy weight management program	281	At 3 months: - 110 participants - Avg. weight reduction of 3.07 kg - Avg. WC reduction of 3.87 cm - 5% weight loss achieved by 25% of participants At 6 months: - 59 participants - Avg. weight reduction of 4.59 kg - Avg. WC reduction of 4.79 cm - 5% weight loss achieved by almost 50% of participants
Evans et al.[15]	Evaluation of a private weight-loss service provided from 2002-2019	Participants enrolled in either a flexible or strict weight loss program with a very low-calorie diet (VLCD) using the Lipotrim protocol, attended weekly weight/BMI check, and received private in-house evaluations from community pharmacists and/or pharmacy assistants.	1738	59% of patients returned to pharmacy to track ≥1 weigh/BMI value after initiating VLCD. 1874 dieting sequences recorded from 1023 participants. - 67.3% achieved >5% weight loss - 555 sequences accessed long-term weight maintenance support Overall, participants achieved mean weight loss of 10.1%.
Graham et al.[16]	Two-phased, retrospective study gathering information from participants through both interviews and post-tests	Phase 1: Individual, face-to-face, semi-structured interview on pre-surgical interactions with pharmacists Phase 2: Confidential survey to test generalizability of Phase 1 results	40	More than 50% of the participants felt that the time with the pharmacist was "valuable" or "very valuable" and that the presurgical service could be improved with additional visits with a pharmacist.
Harmon et al.[17]	6-month intervention with a pre- and post-study	Community pharmacist-led weight loss program at Walgreens pharmacy	12	Avg. weight loss = 5 lb. Avg. BMI reduction = 1.8 kg/m^2 Avg. WC reduction = 2.5 in. Avg. visceral fat loss = 0.6%
Huete et al.[18]	2-year interventional, analytical study to decrease CV risk in obese patients with monthly patient-pharmacist follow-up	Monthly follow-ups focused on adherence to nutritional guidelines and modification of lifestyle habits, along with anthropometric measurements. Biochemical measurements were taken bimonthly, and A1C was measured every 6 months.	60	Overall: - Decrease in all anthropometric values (weight, height, WC) - Increase in HDL levels Patients with initial alteration in their biochemical values: - Reduced BG - Reduced LDL - Reduced CV risk (REGICOR) score Patients without initial alteration in their biochemical values: - Reduced CV risk (REGICOR) score only in females
Milton-Brown et al.[19]	6-month intervention managed by a clinical pharmacist with a pre- and post-study survey	Clinical pharmacist-led weight loss program using meal replacement shakes for 2 meals a day and 1 well-balanced third meal.	37	After 3 months: - 15 patients still enrolled - Avg. weight loss of 10.2 lb After 6 months: - 3 patients still enrolled - Avg. weight loss of 14.17 lb. (not statistically significant)
Moin et al.[20]	12-month cluster randomized controlled trial to test the effectiveness of SDM for diabetes prevention	Face-to-face SDM visit with a pharmacist who used a decision aid to describe diabetes and options for diabetes prevention	1158	At 12 months: - Adjusted mean weight loss was greater (−5.1 lb). in SDM participants than in control

(Continues)

TABLE 1 (Continued)

Author	Design	Intervention	# Participants (n)	Patient outcome
				- Mean percent weight loss was 2.7% higher in SDM participants than in control. These results were the same regardless of gender, baseline A1C, and use of weight loss medications.
Morrison et al.[21]	12-month intervention with pre- and post-study assessments	16 community pharmacy-led weight management programs	458	At 12 months: - 314 patients still enrolled - 32 patients achieved ≥5% weight loss but 57 patients achieved at least some weight loss - Avg. weight loss of 4.1 kg There was no significant difference in results based on sex, baseline BMI, or age.
Murphy et al.[22]	Retrospective chart review of patients	Free pharmacist-led CV risk reduction clinic	130	Avg. BMI reduction of 0.42 kg/m^2. 6 patients moved from obese to overweight category; 6 patients moved from overweight to normal weight category.
Newland et al.[23]	Assessment of pharmacists' views on leading weight management services	Postal survey with 7 sections, encompassing provision, type, training for, confidence in, and barriers to providing these services was sent to all 128 community pharmacies in the local area.	83	About 90% of responders were either "confident" or "very confident" in conducting weight management services overall. Most commonly, the services provided were as follows: - Weight-loss medication (84.1%) - Advice about its use (84.0%) - Dietary advice (72.8%) - Physical activity advice (66.3%) - BMI calculation (68.3%)
Olenak et al.[24]	Cross-sectional study observing prevalence of CV risk and metabolic syndrome in community pharmacies	20-minutes. Appointment with pharmacist, in which they assessed presence of metabolic syndrome, determined 10-year risk of CHD development, and educated patients on lifestyle modifications	239	54% of participants found to have elevated WC. 9% decrease in weight loss overall.
Peletidi et al.[25]	Assessment of community pharmacy-led weight management service providers	Semistructured interviews with community pharmacists and pharmacy staff along 3 themes - training and support, barriers, and approach.	15 (only 3 pharmacists)	100% of participants offered one-on-one, face-to-face appointments in a consultation room with external exercise referral, if needed. Participants included height, weight, WC, and BMI measurements as part of the initial visit, which was repeated during the monitoring period. Most participants reported previous 2-3 days of training for weight management, refresher courses 1-2 times a year, and personal research to maintain up-to-date knowledge. Lack of time, work pressures, and minimal advertising were the major barriers identified.

TABLE 1 (Continued)

Author	Design	Intervention	# Participants (n)	Patient outcome
Phimarn et al.[26]	7-month randomized, controlled trial with a pre- and post-intervention survey	Community pharmacist-led weight management program, involving one-on-one advice from pharmacist and weight loss handbook for self-study	75	No difference in effect on clinical outcomes (WC, BMI, and weight) or dietary intake between groups. Knowledge of survey topics (intention to perform healthy dieting behavior, subjective norm, behavioral beliefs, normative beliefs, control beliefs, and knowledge about overweight and obesity) were increased at week 16 compared to the control group.
Rosenthal et al.[27]	Scoping review of articles from January 2010 to March 2017	Community pharmacy delivered weight-loss and obesity management services	2141 (from 9 studies)	Avg. weight loss of 3.38 kg among the studies. - One study only looked at percent weight loss and found 8.1% loss at 10 weeks. 3 studies compared pharmacy weight management programs compared to the programs run by other health care professionals. - All found no difference in results comparing the two. 2 studies did a post-study follow-up. - One found 1.2 kg sustained weight loss over 12 mon. - One found 1 kg additional weight loss after 6 mon.
Russell et al.[28]	Pharmacist-driven protocol design for automatic dose adjustments in adult obese patients	Implementation of weight- and renal function-based dose adjustments and consultations by clinical pharmacists for obese patients	372 medication orders	149 dose adjustments made; 183 orders verified as-is. 10-15% of patient profiles were consulted on with the clinical pharmacist. - 25-30% received lab monitoring orders as a result. No documented ADEs as a result of the protocol.
Taing et al.[29]	Assessment of pharmacists' weight management practice in community pharmacies across a variety of socioeconomic areas	Survey given online, through the mail, or hand-delivered, specifically focusing on herbal/nutrient WLCM practices in community pharmacy	99 (from 214 pharmacies)	51% response rate. Pharmacists were highly confident to provide advice on lifestyle interventions (94%), orlistat (87%), and meal replacement products (86%). 37% customers sought pharmacy advice relating to WLCM, but only 10% of pharmacists recommended WLCM, even though 30% felt that WLCMs were relatively safe and 22% felt that WLCMs could offer different benefits than conventional medicine. Also, 85% of pharmacists desired more information on WLCMs. Most pharmacist recommendations given on lifestyle interventions (88%) and meal replacement products (41%)

(Continues)

TABLE 1 (Continued)

Author	Design	Intervention	# Participants (n)	Patient outcome
Um et al.[30]	Best practice model program to facilitate implementation of weight management services in community pharmacy	A Healthier Life Program (AHLP) for overweight and obese individuals developed based on current weight management guidelines and recommendations—involved 6 face-to-face sessions with pharmacist over 3 months, targeting diet, physical activity, and behavioral changes.	34	6 participants achieved ≥5% weight loss. Mean weight loss was 3.5 kg Mean WC reduction was 2.0 cm. Overall, participants reported positive experiences of the program with pharmacy accessibility and comfort level with the pharmacist as the major advantages.

Abbreviations: Avg., average; BMI, body mass index; cm, centimeters; CPS, clinical pharmacist specialists; CV, cardiovascular; kg, kilograms; lb, pounds; PACT, patient aligned care team; PCP, primary care physician; SDM, shared decision-making; WC, waist circumference; WLCM, weight loss complementary medicine.

TABLE 2 Components of an obesity assessment[34]

Assessment	Details
Physiologic	An essential step in an assessment to understand the psychological health of the obese patient before, during and after treatment. There are several components of a full physiologic assessment including: (1) quality of life (QOL) questionnaires; (2) hunger assessment; (3) sleep assessment; (4) psychological well-being; and (5) body image assessment Subjective questionnaires and objective tools have been validated and used extensively in the overweight and obese population.
Dietary intake	An important part of the data collection process as it allows the clinical pharmacist an accurate accounting of the patient's food pattern intake.
Physical activity	This information allows the clinical pharmacist to integrate the patient's activity frequency, duration, intensity and type into the treatment goals and plan.
Body composition	Accurate measurements of both fat and fat-free compartments of the body should be completed at the cellular, molecular, and tissue levels and is important for follow-up toward treatment goals that go beyond just weight.

3.2 | Therapeutic goals

Obesity, like many other chronic diseases, has no shortage of guidelines for health care providers to reference when making decisions. The recommendations for goals therein have broad similarities, but also some notable differences. For instances, the National Heart, Lung, and Blood Institute guidelines recommend an initial weight loss of 10% to occur over 6 months and the rate of weight loss should be no more than 1 to 2 pounds per week. For those where weight loss is not achievable, prevention of further weight gain is the minimum goal.[36] Additionally, the American Association of Clinical Endocrinologists (AACE) and American College of Endocrinology (ACE) guidelines provide specific weight loss interventions and goals based on comorbidities (Table 3).[37]

The role of the clinical pharmacist in the management of obesity, specifically related to developing treatment goals, has yet to be established (refer to Table 1). The American College of Cardiology (ACC)/American Heart Association (AHA)/The Obesity Society (TOS) Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults refer to a comprehensive approach, and clinical pharmacists should be recognized as members of the care team providing that comprehensive approach and assisting with weight loss goals.[38] In contrast, the AACE/ACE Comprehensive Clinical Practice Guidelines for Medical Care of Patients with Obesity were released in 2016 and give specific guidance for team-based care and primary, secondary, and tertiary prevention; clinical pharmacists were included in the team-based care, even in the absence of a clinical pharmacist author in the guidelines writing group, and therefore can assist with initial and sequent follow-up on weight loss goals.[37]

3.3 | Nonpharmacological interventions

The AACE/ACE guidelines recommend evidence-based lifestyle therapy for the treatment of obesity that includes meal planning, physical activity and behavior modifications.[37] The meal plan should be individualized for each patient but allow for caloric restrictions of 500-750 kcal per day and generally fall into one of four types: low-calorie diets, low-fat diets, low-carbohydrate diets, and very low-calorie diets (Table 4).[37,39] Physical activity should also be individualized and include >150 minutes per week (over 3-5 days) of aerobic activity and resistance training 2 to 3 times a week.[37] Physical activity such as high-intensity interval training and moderate-intensity interval training (MIIT) have been shown to produce similar reductions in body fat and waist circumference, but the data is not conclusive with some

TABLE 3 Specific treatment goals for weight management[37]

Clinical comorbidity	Treatment goals	
	Weight-loss goals	Clinical goals
Asthma/reactive airway disease	7-8% or more	• Improved in forced expiratory volume at 1 second • Improvement in symptoms
Depression	Uncertain	• Improvement in symptoms • Improved depression scores
Dyslipidemia	5-15% or more	• Improved triglycerides • Improved HDL-c • Improved non-HDL-c
Female infertility	10% or more	• Ovulation • Pregnancy and live birth
Gastroesophageal reflux disease	10% or more	• Improved symptoms
Hypertension	5-15% or more	• Improvement in SBP and DBP • Reductions in doses and/or number of antihypertensive medications
Male hypogonadism	5-10% or more	• Increased serum testosterone
Metabolic syndrome	10%	• Prevention of T2DM
Nonalcoholic fatty liver disease	Steatosis: 5% or more Steatohepatitis: 10-40%	• Steatosis: Improvement in intrahepatocellular lipid • Steatohepatitis: Improvement in inflammation and fibrosis
Obstructive sleep apnea	7-11% or more	• Improved symptoms • Improved apnea-hypopnea index
Osteoarthritis	≥10% With exercise: 5-10% or more	• Improved symptoms • Increased function
Prediabetes	10%	• Prevention of T2DM
Polycystic ovary syndrome	5-15% or more	• Ovulation • Regularized menses • Reduced hirsutism • Enhanced insulin sensitivity • Reduced serum androgen levels
T2DM	5-15% or more	• Improved A1C • Reduced doses and/or number of glucose-lowering medications • Diabetes remission (especially when diabetes duration is short)
Urinary stress incontinence	5-10% or more	• Improved incontinence frequency

Abbreviations: A1C, glycosylated hemoglobin; DBP, diastolic blood pressure; HDL, high-density lipoprotein; SBP, systolic blood pressure; T2DM, type 2 diabetes mellitus.

TABLE 4 Types of diets and associated weight loss outcomes[37,39]

Type of diet	Caloric intake	Macros	Outcomes
Very low-calorie	200-800 kcal	Carbohydrate: 55-60% Fat: <30%	10% weight loss over 2-8 weeks
Low-calorie	800-1500 kcal	Carbohydrate: 55-60% Fat: <0%	10% weight loss over 3-12 months
Low-fat	1000-1500 kcal	Fat: 20-25%	5% over 12 months
Low carbohydrate	1000-1500 kcal	Carbohydrate: 60-150 g Very low carbohydrate: <60 g	10% over 2-8 weeks

studies showing no differences in weight or visceral fat.[40,41] Behavioral interventions that a clinical pharmacist can be involved with include, but are not limited to, goal setting, education, problem-solving strategies, impulse control, and stress reduction while using motivational interviewing strategies.[37]

Unfortunately, unsuccessful weight loss attempts are frequently attributed to lack of motivation and patient non-compliance, despite near-twenty years of research suggesting that interventions based on calorie deprivation are not sustainable.[39,42] Clinical pharmacists have adequate training to assist patients who may be reluctant to return for necessary care when they feel stigmatized or personally blamed for a failure to lose weight by the provider and staff.[33]

The role of the clinical pharmacist in the management of obesity, specifically related to non-pharmacologic intervention, is still being established (refer to Table 1). The European Association for the Study of Obesity (EASO) suggests a multidisciplinary approach for many facets of obesity management. Specifically, it describes the importance of physical activity, nutritional counseling, and cognitive behavior therapy as the cornerstones of non-pharmacological interventions.[43] A clinical pharmacist with Board of Pharmacy Specialties (BPS) certification, Certified Diabetes Care and Education Specialist (CDCES), or a Board Certified-Advanced Diabetes Management (BC-ADM), has the knowledge and clinical experience to provide individualized non-pharmacologic interventions. In addition, a clinical pharmacist can have an active role in modifying the medication regimen according to the patient care plan to prevent hypoglycemia among people with T2DM or hypotension among people with hypertension, along with recommending appropriate nutrient supplementations with vitamins.

3.4 | Pharmacological interventions

Clinical pharmacists play unique roles related to pharmacologic interventions in each of the steps of the patient care process. These roles include agent selection, titration of therapy, change or discontinuation in therapy due to lack of efficacy or adverse effects, identification of drug interactions, assessment of adherence, assistance with medication access, and patient education.[43,44]

The AACE/ACE guidelines recommend pharmacotherapy only as an adjunct to lifestyle modifications.[37] Selection of appropriate therapies is patient specific and can include short-term, and/or long-term medications. Table 5 provides a review of available anti-obesity agents, as of October 2020, including advantages, disadvantages, and clinical pearls, and recommended in nationally based guidelines.[45–48]

From the literature, pharmacist-led services have focused on providing a weight-loss program, including lifestyle modifications and behavioral modifications. There is a lack of evidence regarding disease- and patient-oriented outcomes when a clinical pharmacist initiates, modifies, and/or discontinues pharmacological therapy for obesity management. Given the nuances of each agent, a clinical pharmacist can critically consider and evaluate subjective and objective information to determine the appropriateness of anti-obesity agents, including its effectiveness and safety. Clinical pharmacists can reassess therapeutic goals and redesign drug regimens to assist with weight loss. In addition, clinical pharmacists provide specific education necessary to optimize therapy and reduce the risk for harm while monitoring a patient's regimen. Access to obesity treatments can be challenging. Agents including phentermine/topiramate, naltrexone/bupropion and liraglutide often require prior authorizations.

TABLE 5 Available anti-obesity agents for long-term use[45–48]

Agent [FDA approval date]	Advantages	Disadvantages	Clinical pearls
Xenical (orlistat) [April 23, 1999] Alli (orlistat) [2/9/2007]	• Evidence for prevention of diabetes • Available over the counter	• Risk of intolerance from gastrointestinal symptoms • Administration of three times a day • Potential of drug-drug interactions	• Recommend multivitamin due to depletion of fat-soluble vitamins • Monitor liver function tests periodically
Qsymia (phentermine/topiramate ER) [7/17/2012]	• Administration of once per day • Efficacy for weight loss of 9.1 kg	• Availability in REMS program • Label of controlled medication • Complex titration schedule • Potential for drug-drug interactions	• Obtain negative pregnancy test for women of childbearing age prior to initiation • Monitor heart and blood pressure • Counsel on risk of dependence
Contrave (naltrexone/bupropion) [9/10/2014]	• Improvement in depressive symptoms • Efficacy for weight loss of 4.1 kg	• Potential for drug-drug interactions • Burden of 4 tablets per day	• Educate on risk for fetal harm among women of childbearing age • Counsel on increased risk for suicidal ideation • Monitor heart rate
Saxenda (liraglutide) [12/23/2014]	• Efficacy for weight loss of 5.45 kg • Evidence for diabetes • Efficacy in variety of patient populations (eg, diabetes, sleep apnea)	• Formulation as subcutaneous injection • Risk of gastrointestinal symptoms during titration	• Provide strategies on mitigation of gastrointestinal symptoms • Monitor heart failure

Abbreviations: FDA, Federal Drug Administration; REMS, Risk Evaluation and Mitigation Strategy.

Additionally, cost can be a barrier due to lack of insurance coverage or high out-of-pocket costs for the patient. Clinical pharmacists can assist patients and physicians overcome these barriers by assisting in the completion of prior authorizations, determining insurance coverage for agents, and identifying programs and discounts to help patients afford their medications.

3.4.1 | Comorbid conditions

Several prescription and non-prescription medications cause weight gain. In patients who are overweight or obese, the impact on weight of medications used for comorbid conditions should be considered, and the risk of weight gain should be balanced against the benefits of the medication.[49,50]

A recent study retrospectively evaluated prescription drug use over the previous 30 days using National Health and Nutrition Examination Survey data of 11 055 patients. The researchers found that, between 2013 and 2016, 24.5% of U.S. adults used one or more prescription medications that promote undesired weight gain. The use of medications that promote weight gain were more common in older adults, those with lower household incomes, and those with worse self-reported health status.[50] This data indicates that medications that promote unintentional weight gain are extensively used by a large proportion of adults. Considering alternative prescription or non-prescription products to avoid this undesired adverse drug event should regularly be performed by clinical pharmacists in the community and outpatient settings, as well as the inpatient settings following medication reconciliations and at the time of discharge. Clinical pharmacists ask patients about the use of dietary supplements and nutritional supplements and provide information on the lack of evidence for weight management, including the risk and concern for adverse effects and drug interactions.

3.4.2 | Medications for other comorbid medical conditions

Several medications or medication classes cause weight gain (Box 1). In some instances, differences exist within a medication class in regard to the impact on weight (Table 6). For example, within the class of selective serotonin receptor inhibitors, paroxetine is the most weight-promoting. Fluoxetine and sertraline may cause weight loss during acute treatment and are more weight neutral during chronic treatment. Citalopram and escitalopram appear to be weight neutral or cause weight gain.[49–51] The magnitude of weight gain within a medication class can also vary. For example, when comparing antipsychotics, olanzapine produces the greatest weight gain, followed by clozapine, risperidone, and aripiprazole. In an analysis of 13 trials of olanzapine in adults, the average weight gain was 2.5 kg, and 22.2% of patients gained at least 7% of their baseline body weight. In an analysis of long-term trials with olanzapine, the mean weight gain was 5.59 kg, and 64% of patients gained at least 7% of their baseline body weight.[52] Differences in weight gain may also be seen in different patient populations. For example, differences in weight gain from antipsychotics have been examined according to diagnosis (eg, weight gain due to antipsychotics in adolescents appears to be more prevalent in patients with autism) and population (eg, there is an increased potential for weight gain from antipsychotics in children and adolescents vs adults).[53] Weight gain with antipsychotics appears to be rapid within the first few weeks and then decreases over time and can plateau. However, patients can continue to gain weight gradually over time. Consistent monitoring for weight gain is essential.[54]

Clinical pharmacists can assist with the determination and impact on weight during the drug selection process to minimize the use of medications for comorbid conditions that are associated with weight gain, when possible. For example, when considering treatment options for high blood pressure, clinical pharmacists can suggest angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and calcium-channel blockers as these agents have not been associated with weight gain. These specific classifications should be considered before using medications associated with weight gain, such as beta-adrenergic blockers. If a beta-adrenergic blocker is indicated, a clinical pharmacist should recommend carvedilol or nebivolol due to lower risk of weight gain potential compared to older agents (eg, atenolol, metoprolol, propranolol). Clinical pharmacists can have an active role in women's health, such as promoting combination oral contraceptive

BOX 1 Common medication classes that cause weight gain[59,60]

- Anticholinergics
- Anticonvulsants
- Antihistamines
- Antipsychotics
- Antiretrovirals
- Beta-blockers
- Glucocorticoids
- Hormonal contraceptives
- Insulin
- Selective serontonin receptor inhibitors
- Sulfonylureas
- Thiazolidinediones
- Tricyclic antidepressants

TABLE 6 Propensity to cause weight gain[54]

Antipsychotics		
High	**Moderate**	**Low**
Clozapine	Chlorpromazine	Amisulpride
Olanzapine	Paliperidone	Aripiprazole
	Quetiapine	Haloperidol
	Risperidone	Lurasidone
		Ziprasidone

over progestin-only contraceptives due to weight gain.[55,56] In addition, clinical pharmacists can utilize guidelines from the Endocrine Society to suggest oral contraceptives over injectable medications for women with a BMI 27 kg/m^2 with comorbidities or BMI 30 kg/m^2.[49] Clinical pharmacists can have an important role in evaluating the impact of weight by completing a risk-benefit analysis based on the overall efficacy and safety profile of each option. If a medication that promotes weight gain must be used, a clinical pharmacist can suggest the lowest dose whenever possible.

3.4.3 | Medications for diabetes

Antihyperglycemic medications differ with regard to their impact on weight (Table 7). Current guidelines recommend selecting medications to manage diabetes that promote weight loss or are weight neutral, as opposed to medications that lead to weight gain, when possible.[49,50]

TABLE 7 Commonly used drugs and their impact on weight[49,50]

Promote weight loss	Weight neutral	Promote weight gain
Antihyperglycemic medications		
Alpha-glucosidase inhibitors GLP-1 receptor agonists Metformin Pramlintide SGLT-2 inhibitors	DPP-4 inhibitors	Insulin Meglitinides Sulfonylureas Thiazolidinediones
Neurobehavioral medications		
Bupropion Desvenlafaxine Lamotrigine Topiramate Venlafaxine Ziprasidone Zonisamide	Aripiprazole Haloperidol	Carbamazepine Clozapine Divalproex Escitalopram Gabapentin Lithium MAO inhibitors Mirtazapine Olanzapine Paroxetine Quetiapine Risperidone Tricyclic antidepressants Valproate
Antihypertensive medications		
	ACE-inhibitors Angiotensin receptor blockers Calcium-channel blockers Specific beta-adrenergic blockers (carvedilol, nebivolol)	Specific beta-adrenergic blockers (atenolol, metoprolol, propranolol)

The extent of weight loss or weight gain varies between agents. Metformin produces a modest weight loss (2-3 kg), as does pramlintide (1.5 kg) in patients with T2DM.[50] Clinical trial data indicate a mean weight loss of 2-3 kg for sodium-glucose co-transporter-2 (SGLT2) inhibitors.[57] Clinical trial data indicate a mean weight loss of 2-4 kg for the glucagon-like peptide-1 receptor agonist class, but considerable heterogeneity exists between products, with the most weight loss associated with subcutaneous semaglutide.[50] There is also significant heterogeneity in individual patient response, with some patients achieving no weight loss and others losing as much as 25 kg. Most weight loss occurs in the first 3 to 6 months and is sustained over time.[58]

Weight gain with insulin is common but varies considerably based on insulin product, dose, and regimen. Some evidence indicates that basal insulin is associated with less weight gain compared to biphasic or prandial insulin.[59] Therefore, if insulin is needed for glucose management, consider basal insulin as the first-line option as opposed to a combination regimen or pre-mixed insulin. Average weight gain with sulfonylureas is typically 1-2 kg and 3-4 kg with thiazolidinediones but increase when used in combination with insulin. Current practice guidelines point out that patients can gain as much as 10 kg in the first 3 to 6 months of therapy with sulfonylureas, thiazolidinediones, or insulin.[49]

Another weight-related consideration when selecting diabetes medications is the risk of hypoglycemia and those with a higher risk of hypoglycemia include insulin, meglitinides, and sulfonylureas.[49,50] Hypoglycemia can be common during weight loss with some diabetes medications. People with diabetes may increase food intake or alter physical activity plans to avoid hypoglycemia, which is counterproductive to a weight loss regimen. Therefore, clinical pharmacists can assist in the prevention of hypoglycemia by adjusting the diabetes medication regimen.[49]

The impact of weight must be balanced against the overall efficacy and safety profile of each option. If a medication that promotes weight gain must be used, the clinical pharmacist can provide specific recommendations to use the lowest dose whenever possible. Clinical pharmacists, as members of a multidisciplinary care team, can help to navigate these types of therapeutic considerations to manage weight. As part of the patient care process, clinical pharmacists carefully review the patient's concomitant medications, and when possible, minimize and/or provide alternatives for medications that promote weight gain. Due to the lack of literature, more research should be conducted to pave a clear path for clinical pharmacists' role in pharmacological interventions to prevent and treat obesity.

3.5 | Surgical interventions

Patients with obesity may be candidates for surgical intervention, particularly if the patient remains motivated despite unsuccessful lifestyle modifications and/or pharmacological interventions. Overall, the guidelines have a common recommendation of bariatric surgery for

patients with BMI ≥40 kg/m^2 or BMI ≥35 kg/m^2 with a co-morbid condition.[49,50] A referral to a bariatric surgeon would be required for enrollment in a bariatric clinic, which would involve a multidisciplinary team. Team members could include a dietitian, mid-level practitioner, social worker, and other health care professionals, such as a clinical pharmacist. The type of surgical procedure will be determined based on many patient-related factors (eg, age, presence of comorbid conditions, preference).

Bariatric surgery is a general term that includes gastric bypass (commonly known as Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), gastric banding (GB) and biliopancreatic diversion.[60] Bariatric surgery has been recognized as the most effective modality to reduce body weight and obesity-related diseases as well as mortality.[60,61] Eligibility for bariatric surgery considers several factors including BMI, co-morbidities and weight reduction history.[37,49,50] Overall, choosing the type of surgery should be made on an individual basis taking into consideration goals of therapy and other risk stratification.[62,63]

3.5.1 | Preoperative management

Once a patient is deemed a candidate for bariatric surgery, the role of the clinical pharmacist in managing medications before and after surgery is crucial. In team-based approach, a physician can complete a thorough physical examination and mental health assessment, whereas a dietitian or nutrition specialist can assess nutritional status and needs. While a clinical pharmacist is not specifically mentioned in the guidelines regarding team-based care for bariatric surgery, appropriate medication management and education should be provided prior to surgical intervention.[63,64] While there is only one study indicating the role of a clinical pharmacist in medication management in a bariatric clinic,[64] a clinical pharmacist can serve an important role in conducting comprehensive medication management. Additional research should be considered to validate the role of a clinical pharmacist and impact on patient outcomes, prior to surgical interventions related to weight and obesity. Particularly for chronic disease states, such as obesity, a clinical pharmacist can ensure an appropriate, effective, and safe medication regimen is designed for a patient to optimize clinical outcomes.[65] As the medication expert, the clinical pharmacist provides various drug information services and thorough education when communicating to patients about any changes with their prescribed medication regimen, including antiobesity agents that may be prescribed by a bariatric physician. A clinical pharmacist also identifies patients who may need to discontinue specific medications before surgery. As an example, a clinical pharmacist can ensure adequate education is given for oral contraception to a patient of childbearing age, including discontinuation of oral contraception at least 3 weeks before surgery to reduce the risk of venous thromboembolism.[66] An alternative option, along with education, regarding the plan for contraception before surgery.[66] As another example, metformin and a SGLT2 inhibitor should be stopped prior to surgical procedures to minimize risk of lactic acidosis and euglycemic ketoacidosis, respectively. Implied earlier, clinical pharmacists can promote and assist with diabetes management to target desired glycemic levels prior to a surgical intervention. Clinical pharmacists could also be involved with follow-up of laboratory tests with the provider and patient, as well as recommend any necessary interventions for abnormal results, if needed. A clinical pharmacist has a role in a multidisciplinary team to assess mental health and provide psychotherapy, if adequately trained, prior to surgical intervention. Clinical pharmacists can screen for any underlying mental health issues or food addiction, using appropriate scales and tools, and educate on the risk of psychosocial issues after surgery.[67]

3.5.2 | Preoperative management

When a patient is admitted to the hospital for bariatric surgery, a clinical pharmacist has an immediate role in obtaining a medication history and assessing, safety, and appropriateness. Upon admission, it is essential to document the patient's medication regimen from home including prescription and over-the-counter medications. A thorough history along with adherence and allergies to medications should be documented and compared to new medication lists at every stage of the hospitalization in order to recognize medication-related problems. A clinical pharmacist addresses discrepancy to decrease medication errors and prevent adverse events. In addition, a clinical pharmacist oversees and trains other pharmacy personnel on proper medication reconciliation in terms of specific questions and details to be collected and documented in the electronic health record. At the time of medication reconciliation, the clinical pharmacist can explain to the patient the general management of chronic disease states immediately following the surgical intervention, as a method to begin discharge planning. Before the surgical procedure, a clinical pharmacist can complete medication verification and review the patient's weight when admitted to the hospital; an accurate weight and consistency with calculation with ideal or actual body weight is important to obtain in order to calculate doses for pain management, prophylactic therapy of venous thromboembolism, and infection prevention.[62,68–71]

A clinical pharmacist is the medication expert and can be involved in the process of developing any policy related to medications needed before, during, and after bariatric surgical interventions at the respective institution. In addition, the clinical pharmacist can have input on the order set prior to and after surgical intervention to ensure evidence-based practice of medications, along with accurate weight-based calculation of specific medications. A clinical pharmacist ensures that policies and procedures are updated when new evidence is published or could provide education to the bariatric surgeon and other health care professionals regarding the management of patients in the hospital for surgical intervention related to obesity management. There is a lack of data describing and evaluating pharmacist-led services within the hospital for weight and obesity management (refer to Table 1); however, some evidence has been published on specific policies, procedures, and/or protocols related to appropriate weight-

based dosing (ideal vs actual) of anticoagulants and antibiotics than opioids in this patient population.[68–72]

3.5.3 | Post-operative management

Weight loss outcomes for weight-related surgical interventions are expressed as excess weight loss (EWL).[60,61] The procedures of RYGB and SG have similar outcomes with an EWL of 60% which was maintained for 10 years; however, it appears that RYGB is slightly more effective than SG beyond the 5-year mark.[61] Gastric banding is associated with a 45-55% EWL which was maintained after 10 years and biliopancreatic bypass reports a 70% EWL which is during for up to 20 years.[61] Gastric banding was shown in a systematic review to be inferior to gastric bypass, additional gastric banding appears to be inferior to SG.[60]

Immediately following bariatric surgery, a patient will remain admitted to the hospital for observation and a short-term recovery before discharge. Extensive education and management should be provided by nutrition services, which may include a clinical pharmacist with residency training and/or board certification in nutrition support. Education is warranted on the consumption of solid foods and liquids with encouragement of 3-5 small meals and 1-2 high protein snacks per day; an adequate protein consumption would be 60-90 g per day or 1.2-1.5 g per kilograms per day.[63,73] Thirty minutes after a meal, liquid could be consumed by the patient.[63,73] As a team member, the clinical pharmacist can provide information on the impact of medications, based on nutritional recommendations after bariatric surgery.

During the patient's hospitalization, the clinical pharmacist can provide counseling daily on medication changes in preparation for discharge. A clinical pharmacist adjusts doses and/or frequencies of medications related to chronic disease state management. A clinical pharmacist provides patient-centered recommendations to individualize care and prevent any adverse events, particularly based on specific objective information (eg, blood glucose values; blood pressure measurements). For example, a patient with a sulfonylurea and/or insulin could experience hypoglycemia due to changes in dietary intake, as a full liquid diet may be recommended 1 to 2 weeks following the bariatric procedure.[63] Therefore, blood glucose values should be monitored frequently following surgery and upon discharge, requiring weekly insulin adjustments and avoidance of insulin stacking.[63] Following surgical intervention, clinical pharmacists can screen for food and drug interactions with the prescribed regimen.[64] Additionally, clinical pharmacists will have access to drug information resources and the institution's formulary to determine necessary changes to formulations and medications due to surgical procedures and gastrointestinal changes.[64] For example, a medication may need to be changed or adjusted due to changes with absorption (eg, reduction with acidic drugs compared to increase with basic drugs).[63] As an example, a clinical pharmacist can provide dosing recommendations when changing from an extended-release to immediate-release formulation due to the changes in gastrointestinal transit time following the procedure and potential of reduced bioavailability.[63,64]

There are nutritional deficiencies associated with bariatric surgery with biliopancreatic bypass having the highest risk of deficiency. A clinical pharmacist can recommend preventative measures such as proton pump inhibitors and nutritional supplements depending on the type of surgical procedure. Despite the lack of evidence for adequate nutritional supplementation, clinical guidelines also recommend at least 1 multivitamin per day following gastric banding or 2 multivitamins per day after the other surgical procedures. An alternative option includes a bariatric-specific, high potency multivitamin.[63,73] Therefore, clinical pharmacists can suggest routine supplementation for deficiency prevention.

3.5.4 | Hospital discharge/follow-up

The role of a clinical pharmacist at the time of hospital discharge has been well established in the literature.[74–77] However, there is no literature determining the role of the clinical pharmacist at discharge or in transitions of care following bariatric surgery. At the time of discharge, the clinical pharmacist can discuss the post-discharge instructions with the patient and provide specific details in a written format to increase understanding and follow-through by the patient with regards to a new medication regimen. The clinical pharmacist designs a monitoring plan for patients with specific disease states, such as hypertension and diabetes, to prevent adverse events at home. The clinical pharmacist can ensure scheduling and ordering of laboratory tests for micronutrient deficiencies, as recommended by clinical guidelines. A clinical pharmacist screens and determines eligibility for a meds-to-beds program, to facilitate delivery of medications before being discharged, rather than picking them up on the way home.[76,77] Further, the clinical pharmacist can address questions related to nutritional deficiencies particularly in recommending and determining appropriate supplements that may be available over-the-counter as treatment options. A clinical pharmacist ensures that the patient has adequate follow-up scheduled, but also address any questions or possible medication discrepancies in 2 to 3 days after discharge.

The clinical pharmacist can apply similar concepts and responsibilities from the outpatient setting to the inpatient setting and transitions of care when assisting and providing medication management for obesity management. A clinical pharmacist has a role in chronic care and extended follow-up, as telehealth, face-to-face, or shared medical appointments, and can assist with frequent assessment and monitoring of the patient's progress following a surgical intervention, in a similar manner to outpatient management. A follow-up should occur within 30 days or sooner after the procedure and up to 2 years in which weight loss is tracked along with cardiovascular risk factors. This is also supported by the expert panel in the joint guidelines for the management of obesity in adults.[38] Thorough subsequent follow-up appointments, clinical pharmacists can suggest treatment options for common gastrointestinal symptoms that may occur after bariatric surgery, if not improved with non-pharmacological interventions. For long-term dietary considerations, a clinical pharmacist can educate and offer guidance for smoking cessation and alcohol consumption, if

noted after bariatric surgery for an individual patient. A clinical pharmacist can follow recommendations for periconception, antenatal, and postnatal care to promote a health pregnancy for a woman of childbearing age after bariatric surgery.

Overall, there is limited evidence on the clinical pharmacist's role during an admission and upon discharge after bariatric surgery; a clinical pharmacist can supplement care in a team-based approach and using shared decision-making strategies with the patient for long-term medical surveillance after surgery.

4 | MULTIDISCIPLINARY APPROACH

According to EASO, a multidisciplinary approach to addressing physical activity, nutritional counseling, cognitive behavior therapy, pharmacotherapy (anti-obesity drugs), bariatric surgery, and social issues is required.[78] The complexity of obesity and its treatment for continuing management can be addressed in a proposed model with the patient at the center and a circle of multidisciplinary team members surrounding the patient.[79] In this model, key components of treatment are counseling, medication, surgery, and coordination of these components. For a multidisciplinary team to be effective, the requirements are a sufficient number of patients, a sponsoring institution or system, considerable resources (such as substantial capital), adequate health insurance, and skilled and trained team members.[79]

One study evaluated the development of a multidisciplinary weight management program with diet, physical activity, and behavior modification with one-hour sessions over 20 weeks.[80] The faculty for the program included an attending physician, clinical pharmacist, and behavioral psychologist. This study provides some evidence into the potential role of a clinical pharmacist with other health care professionals in weight management.[80] Another study using convergent interviews and observations led to the development of a multicomponent multidisciplinary approach to obesity management in Australia.[81] Team members identified were dieticians, exercise physiologists, specialist medical physicians, general practitioners, bariatric surgeons, psychologists, diabetes educators, social workers, occupational therapists, physiotherapists, multicultural health workers, and nurses. While clinical pharmacists are not specifically identified as a team member in this study, clinical pharmacists can serve as diabetes educators; therefore, they may have been included in this study.[81]

As another example, the 5As of obesity management (assess, advise, agree, assist, arrange) have been utilized in the Canadian Obesity Network's collection of knowledge tools in the management of obesity to increase frequency and quality of obesity management in primary care using the 5As model interventions to change provider behavior.[82] The clinic-based multidisciplinary teams in this study included registered nurses, nurse practitioners, mental health and dietitians.[80] Although clinical pharmacists were not specifically identified in these programs, they are a vital team member within the ambulatory care setting working with physicians, nurses, dietitians, and behavioral health specialists. Overall, some studies have included clinical pharmacists in multidisciplinary approach for weight management. Recognition by healthcare systems, organizations, and clinics is needed to include a clinical pharmacist in the multidisciplinary approach for the identification, prevention, and treatment of obesity.

5 | CALL TO ACTION

5.1 | Board certification

Clinical pharmacists have board certification opportunities in areas of ambulatory care, cardiology, compounded sterile preparation, critical care, geriatric, pharmacotherapy, infectious disease, nuclear, nutrition support, oncology, pediatric, psychiatry, and solid organ transplantation. Additional opportunities for board certification in diabetes are CDCES and BC-ADM. While clinical pharmacists currently have a wide range of therapeutic areas for board certification, pharmacists should be eligible for obesity certification through the American Board of Obesity Medicine or achievement of advanced education certificate through the Obesity Medicine Association.[83,84]

5.2 | Research

Due to few studies in this area, additional investigations should be conducted to further determine the role and impact of pharmacist-led services for those who are overweight or have obesity. Studies should be conducted with a strong methodology, preferably a prospective design to determine the impact of specific interventions, such as nonpharmacologic and/or pharmacologic interventions, including psychotherapy and behavioral modifications. Endpoints should focus on disease- and patient-oriented outcomes, such as change in weight from baseline to end of study period or patient satisfaction from validated questionnaire with change in treatment. Additional investigation is needed for defining sustainability weight-related outcomes and aligning with quality metrics for financial viability of these services. Based on the clinical experience and expertise in this area, clinical pharmacists have a valuable role in a team-based approach with identification, prevention, and treatment of obesity.

5.3 | Clinical practice guidelines

Since identifying obesity as a diagnosable medical condition, several national organizations have developed consensus guidelines regarding the prevention and treatment of the disease. The ACC and AHA collaboratively developed clinical practice guidelines in 2013 and provided a treatment algorithm to guide primary care providers in the evaluation, prevention, and management of excess body weight in their patients.[38] These guidelines do not specifically highlight clinical pharmacists for inclusion in the multidisciplinary team.[38] The AACE/ACE Comprehensive Clinical Practice Guidelines for Medical Care of Patients with Obesity were later published in 2016.[37] This set of guidelines utilizes the Chronic Care Model (CCM) approach as the

backbone of their recommendations, emphasizing weight-loss therapy for prevention and treatment of obesity-related complications.[85] One of the six guiding principles of the CCM is "delivery system design," relying on the creation and coordination of an obesity care team for the collaborative provision of patient care. This guideline outlines team-based care including team leaders and support health care professionals, such as clinical pharmacists.[85] Because clinical pharmacists are the leading experts for the provision of safe and effective management of pharmacotherapies to improve outcomes and quality of life, and a portion of the AACE/ACE guidelines is dedicated to the consideration of medication management for obesity, it would necessitate the inclusion of a skilled and qualified clinical pharmacist as part of the obesity care team.[85,86] In this context, the clinical pharmacist should not only be involved in the selection, dosing, and monitoring of anti-obesity medications, but also in the direct provision of pharmaceutical care of obesity-related complications, as set forth by the guideline. Clinical practice guidelines should be updated to consistently identify and include pharmacists as team members for practice care.

5.4 | Pharmacy education and training

The Provider Competencies for the Prevention and Management of Obesity, published in 2017, were collaboratively crafted by educators from over 20 organizations and societies representing a dozen different health professions.[13] The text does not specifically assign functions to different health disciplines, but instead directs the educational system for inclusion and utilization of a myriad of medical and non-medical disciplines for the prevention and treatment of obesity.[13] Schools/colleges of pharmacy and residency program should reflect on the document to make any necessary adjustments in training for minimum competency on core obesity knowledge, interprofessional obesity care, and patient interactions for pharmacy learners.

6 | CONCLUSION

Clinical pharmacists can have an important role in the management of obesity in outpatient and inpatient settings. Clinical pharmacists obtain medication histories, perform specific assessments, recommend evidence-based therapy, educate on drug-specific factors, and address medication-related issues across the continuum of care, including barriers or discrepancies at discharge. While clinical pharmacists achieve board certification within the profession, other organizations should recognize clinical pharmacists with advanced training and certification. Overall, clinical pharmacists are active members of a multidisciplinary team and can assist with the improvement of outcomes related to obesity management.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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