

AU InforMed

Volume 20 Number 2 (Issue 321)

Friday, March 4, 2022

Guest Editors: Lauren McConnell Pharm.D. Candidate 2022, Caleb Aycock Pharm.D. Candidate 2022, Justin Henry Pharm.D. Candidate 2022, Wesley Lindsey, Pharm.D.

MARCH is National Kidney Month.



Key Inforbits

- 2022 KDIGO CKD Guideline Updates
- Guidelines for Blood Pressure Management in CKD
- Guidelines for Diabetes Management in CKD
- Hepatitis C in CKD Guideline Updates

2022 KDIGO CKD Guideline Updates

On January 26, 2022, Kidney Disease Improving Global Outcomes (KDIGO) announced that the 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease would be formally updated in 2022. Dr. Adeera Levin (Canada) and Dr. Paul Stevens (United Kingdom) will once again co-chair the chronic kidney disease (CKD) Guideline Updates, as they did for the 2012 CKD Guidelines. Their latest statement addresses the need to review the newest evidence, since “a lot has happened in global nephrology” since 2012.¹ These updates aim to review relevant literature, implement new recommendations from advanced CKD research, and to improve patient outcomes worldwide.

References

1. KDIGO Announces Launch of CKD Guideline Update [Internet]. Brussels, Belgium: KDIGO. 2022 Jan 26 [cited 2022 Feb 24]. Available from: <https://kdigo.org/wp-content/uploads/2022/01/KDIGO-CKD-Guideline-Update-News-Release.pdf>

Guidelines for Diabetes Management in CKD

In January 2022, KDIGO launched the [Diabetes in CKD Visual Guideline](#) and the [Diabetes in CKD Infographic Set](#). These serve as implementation tools for diabetes management in CKD and aim to make key recommendations and practice points from the 2020 Clinical Practice Guideline for the Management of Diabetes in CKD quickly accessible and visualizable.^{1,2} This is the first published guideline for this content, which focuses on integrating CKD-specific and evidence-based recommendations to existing diabetes management strategies. Specifically, the guideline focuses on blood sugar monitoring and targets, lifestyle modifications, and antidiabetic medication regimens.^{3,4} In the following subsections, we will highlight and summarize key new recommendations from the 2020 KDIGO Diabetes Management in CKD Guideline.

Recommendation 2.2.1: “We recommend an individualized HbA1c target ranging from < 6.5% to < 8.0% in patients with diabetes and CKD not treated with dialysis.”³

KDIGO still recommends that the hemoglobin A1c (HbA1c) is the best tool to use for blood sugar monitoring in diabetes and CKD, as the accuracy of HbA1c does not vary in patients with an eGFR of ≥ 30 mL/min/1.73m². Furthermore, the guideline recommends patient specific HbA1c targets based on risk for hypoglycemia, continuous glucose monitoring (CGM) use, and antidiabetic medication regimens.³

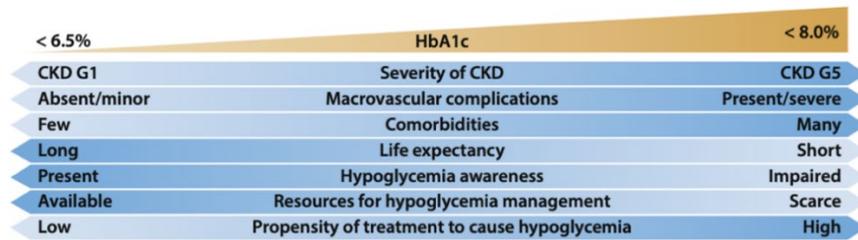


Image Source: [https://www.kidney-international.org/article/S0085-2538\(20\)30798-5/fulltext](https://www.kidney-international.org/article/S0085-2538(20)30798-5/fulltext)

Practice Point 4.1.: “Glycemic management for patients with T2DM and CKD should include lifestyle therapy, first-line treatment with metformin and a SGLT2i, and additional drug therapy as needed for glycemic control.”³

This treatment algorithm outlines the selection of antidiabetic medications for patients with T2DM and CKD, which should be guided by patient preferences, comorbidities, and medication cost (see diagram below). Metformin and an SGLT2i are first-line treatment options. For patients who remain uncontrolled on these first-line medications, or who cannot tolerate them, it is recommended to use a long-acting GLP-1 RA.³

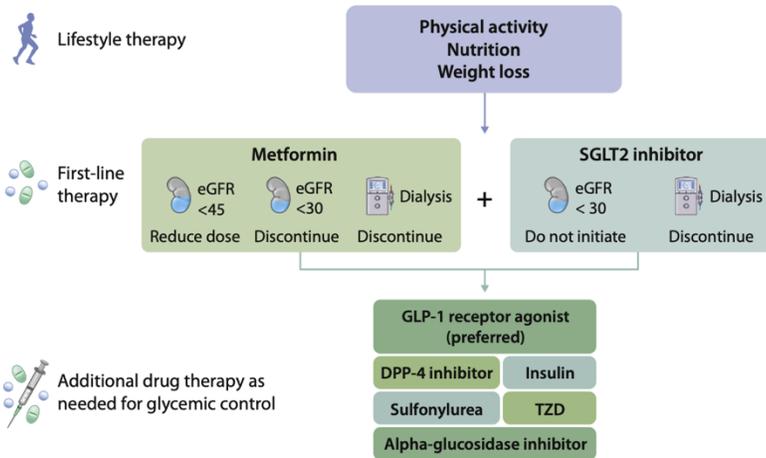


Image Source: [https://www.kidney-international.org/article/S0085-2538\(20\)30798-5/fulltext](https://www.kidney-international.org/article/S0085-2538(20)30798-5/fulltext)

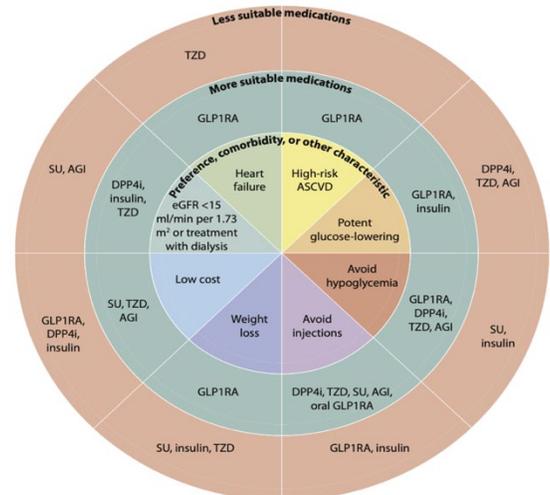


Image Source: [https://www.kidney-international.org/article/S0085-2538\(20\)30798-5/fulltext](https://www.kidney-international.org/article/S0085-2538(20)30798-5/fulltext)

References

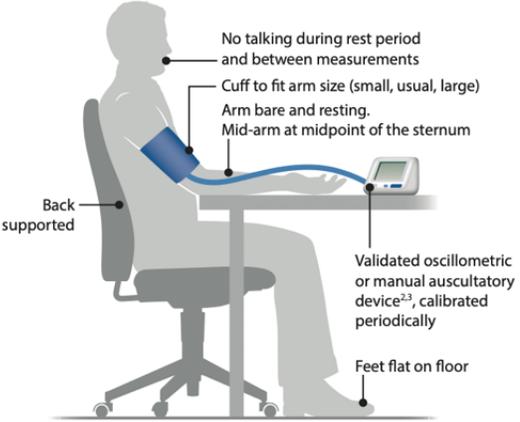
1. Clinical Practice Guideline for Diabetes Management in CKD: Diabetes in CKD Visual Guidelines [Internet]. Brussels, Belgium: KDIGO. 2022 Jan [cited 2022 Feb 27]. Available from: <https://client.globaldata.com/browse/ComprehensiveDiabetes.html>
2. Clinical Practice Guideline for Diabetes Management in CKD: Diabetes in CKD Infographic Set [Internet]. Brussels, Belgium: KDIGO. 2022 Jan [cited 2022 Feb 27]. Available from: <https://kdigo.org/wp-content/uploads/2022/01/KDIGO-Diabetes-Guideline-Infographics.pdf>
3. de Boer IH, Caramori ML, Chan JCN, et al. Executive summary of the 2020 KDIGO Diabetes Management in CKD Guideline: evidence-based advances in monitoring and treatment. *Kidney Int* [Internet]. 2020 Oct [cited 2022 Feb 27];98(4):839-848. Available from: [https://www.kidney-international.org/article/S0085-2538\(20\)30798-5/fulltext](https://www.kidney-international.org/article/S0085-2538(20)30798-5/fulltext)
4. KDIGO Announces Publication of the Diabetes Management in Chronic Kidney Disease Guideline [Internet]. Brussels, Belgium: KDIGO. 2020 Sep 29 [cited 2022 Feb 27]. Available from: <https://kdigo.org/kdigo-announces-publication-of-the-diabetes-management-in-chronic-kidney-disease-guideline/>

Guidelines for Blood Pressure Management in CKD

On February 23, 2021, KDIGO announced the publication of the 2021 Blood Pressure in CKD Guidelines, an update to the KDIGO Guideline for BP Management published in 2012, that reflects emerging research to guide common BP management issues in CKD patients.¹ While the updated guidelines identified a new BP target for patients with CKD, the emphasis of these updates largely focused on the technique of BP measurement in adult outpatients.² Previous 2012 KDIGO CKD Guidelines recommended a goal BP of $\leq 140/90$ mmHg, unless albuminuria was present, in which the goal was $\leq 130/80$ mmHg. Since the publication of these guidelines, research has continued to evolve and new evidence has emerged, specifically from the Systolic Blood Pressure Interventional Trial (SPRINT).³ In the following subsections, we will highlight and summarize key new recommendations from the 2021 Clinical Practice Guidelines for the Management of Blood Pressure in CKD.

Recommendation 1.1: “We recommend standardized office BP measurement in preference to routine office BP measurement for the management of high BP in adults.”³

The 2012 KDIGO CKD Guidelines previously did not specify how BP must be measured. There have been high rates of variability reported with non-standardized, routine, or casual clinic BP measurements (e.g., immediately taking BP after the patient has rushed into their appointment or placing the cuff below a rolled-up shirt sleeve).² These findings have highlighted the importance of proper BP measurement technique, with little emphasis on the type of equipment used to measure the BP. KDIGO has thus created the Standardized BP Measurement Protocol (below) for clinicians and pharmacists to utilize to ensure proper BP measurement.^{2,3}

<p>Select Cuff Size</p> <ul style="list-style-type: none"> Bladder should encircle 80% of upper arm Note if larger or smaller cuff is used 	<p>Estimate Individual’s BP</p> <ul style="list-style-type: none"> Use average of 2 or more readings taken from 2 or more visits
<p>Positioning</p> <ul style="list-style-type: none"> Sitting in chair with back supported, legs uncrossed, and feet flat on the floor Cuffed arm must be supported by a table or the observer Middle of the cuff on upper arm must be at heart level 	<div data-bbox="992 1100 1344 1213" style="border: 1px solid black; padding: 5px; background-color: #e0f0ff;"> <ul style="list-style-type: none"> • Quiet room (no talking by patient or observer) • No smoking, caffeine, or exercise for ≥ 30 min before measurement • Empty bladder • Relax for >5 min </div> 
<p>Patient Preparation</p> <ul style="list-style-type: none"> Abstain from caffeine, exercise, and smoking for 30 minutes prior Ensure that the bladder is emptied Remove clothing over arm and place cuff on bare skin Relax for at least 5 minutes without talking or moving and continue silence during measurements 	<p>Image Source: https://kdigo.org/wp-content/uploads/2021/03/Top-10-Takeaways-Clinicians-KDIGO-BP-Guideline.pdf</p>
<p>Measurement Technique</p> <ul style="list-style-type: none"> Use validated and periodically calibrated device or auscultatory measurement Use arm which gives higher readings Inflate cuff to 20-30 mmHg above obliteration of radial pulse Deflate cuff by 2 mmHg/sec Take 3 readings and discard the first one Separate readings by 1-2 minutes 	<p>Record Readings</p> <ul style="list-style-type: none"> Document SBP and DBP Note time of recent antihypertensive use Provide readings verbally and in writing to patient

Recommendation 1.2: “We suggest that out-of-office BP measurements with ambulatory BP monitoring or home BP monitoring be used to complement standardized office BP readings for the management of high BP.”³

KDIGO has acknowledged the high time burden that accompanies this new protocol, but states that the benefits associated with its implication make it worthwhile. As a counterpoint to this common concern, KDIGO released the following statement:

Additionally, KDIGO still advocates for patients to self-monitor their BP at home and recommends that healthcare providers use this information to complement standardized office BP measurements.²



Recommendation 3.1.1: “We suggest that adults with high BP and CKD be treated with a target systolic BP of < 120 mmHg, when tolerated, using standardized office BP measurement.”³

The new KDIGO recommendation to target a SBP of < 120 mmHg in CKD removes distinctions based on degree of urinary protein (e.g., albuminuria). While this recommendation supports patient-specific treatment decisions, the lower SBP target is a product of combined results from the [SPRINT](#) and [ACCORD](#) trials.³ Knowing this, the benefits of a lower SBP target may be safely extrapolated to all patients (with and without diabetes), excluding transplant recipients and those receiving dialysis.^{2,3} However, this recommendation is made currently with the use of the Standardized BP Measurement Protocol. Furthermore, KDIGO specifically stated that a SBP target of < 120 mmHg could be potentially hazardous to patients if BP measurements are obtained in a non-standardized manner.²

Cardiovascular disease (CVD) is more likely to occur in patients with CKD, as compared to progression to kidney failure, and is a common cause of death in this patient population. Employing an intensive BP lowering approach has been proven to lower the risk of CVD events and mortality.³ Therefore, KDIGO also revisited the use of antihypertensive agents recommended to achieve a goal SBP < 120 mmHg.

- 1 ACEi/ARB is 1st line for hypertensive patients with CKD G1-4 and albuminuria A2-3, with or without diabetes
- 2 Recheck BP within 2-4 weeks following initiation of ACEi/ARB
- 3 Target the highest approved and tolerated dose
 - Continue current dose or increase dose unless SCr rises > 30% in 4 weeks
- 4 Reduce dose in patients with symptomatic hypotension or uncontrolled hyperkalemia
 - In ACEi/ARB associated hyperkalemia, consider other methods to reduce potassium levels, whether than decreasing the dose

References

1. KDIGO Announces Publication of the 2021 Blood Pressure in Chronic Kidney Disease Guidelines [Internet]. Brussels, Belgium: KDIGO. 2021 Feb 23 [cited 2022 Feb 24]. Available from: <https://kdigo.org/kdigo-announces-publication-of-the-2021-blood-pressure-in-chronic-kidney-disease-guideline/>
2. Top 10 Takeaways for Clinicians from the KDIGO 2021 Clinical Practice Guideline for Blood Pressure Management in CKD [Internet]. Brussels, Belgium: KDIGO. 2021 Dec 21 [cited 2022 Feb 24]. Available from: <https://kdigo.org/wp-content/uploads/2021/03/Top-10-Takeaways-Clinicians-KDIGO-BP-Guideline.pdf>
3. Tomson CRV, Cheung AK, Mann JFE, et al. Management of Blood Pressure in Patients With Chronic Kidney Disease Not Receiving Dialysis: Synopsis of the 2021 KDIGO Clinical Practice Guideline. *Ann Intern Med* [Internet]. 2021 Sep [cited 2022 Feb 24];174(9):1270-1281. Available from: https://kdigo.org/wp-content/uploads/2021/06/Tomson_Annals_Int_Med_062121.pdf

Hepatitis C in CKD Guideline Updates

On October 8, 2018, KDIGO announced the publication of the 2022 Clinical Practice Guideline Update for the Prevention, Diagnosis, Evaluation, and Treatment of Hepatitis C in CKD, which was available for public review until February 25, 2022. KDIGO stated that a final version will be prepared and provided to the public following any needed revisions based on feedback received.¹ Below, we have provided a brief overview of the Summary of Recommendation Statements that best pertain to the role of the pharmacist in the treatment of HCV infection in patients with CKD.

Recommendation 2.1: “We recommend that all patients with CKD (including kidney transplant recipients and those on dialysis) with HCV be evaluated for direct-acting antiviral (DAA)-based therapy as outlined in the table.”²

Table 1. Direct-acting antiviral (DAA) regimens with evidence of effectiveness for various CKD populations.

CKD Populations	Direct Acting Antiviral Regimens*	HCV Genotypes	Certainty of Evidence†
G1–G3b, not KTR	Any licensed DAA regimen	All	Not evaluated
G4–G5ND,^a including KTR^{b,c}	Glecaprevir / Pibrentasvir, 8 or 12 wk [*]	All	High
	Sofosbuvir / Daclatasvir, 12 or 24 wk [†]	All	High
	Elbasvir / Grazoprevir, 12 wk	1a, 1b, 4	High
	Sofosbuvir / Ledipasvir, 12 wk	All	Very Low
G5D^d	Sofosbuvir / Velpatasvir, 12 wk	All	High
	Sofosbuvir / Daclatasvir, 12 or 24 wk [‡]	All	Moderate
	Sofosbuvir / Ledipasvir, 12 wk	All	Moderate
	Glecaprevir / Pibrentasvir, 8 or 12 wk [§]	All	Moderate
	Elbasvir / Grazoprevir, 12 wk	1a, 1b, 4	Moderate
	PrO±D, 12 wk	1a, 1b, 4	Moderate
	Daclatasvir / Asunaprevir, 24 wk	1b	Low
KTR,^b G1–G3b^e	Sofosbuvir / Ledipasvir, 12 or 24 wk ^{**}	All	High
	Sofosbuvir / Daclatasvir, 12 or 24 wk ^{††}	All	High
	PrO±D, 12 wk	1a, 1b, 4	Very Low

Image Source: <https://kdigo.org/wp-content/uploads/2022/02/KDIGO-2022-Hepatitis-C-Guideline-Update-Public-Review-Copy.pdf>

Patient-specific treatment regimens should be selected based on treatment history, drug interactions, GFR, stage of hepatic fibrosis, kidney and liver transplant candidacy, and comorbidities (Level 1, Grade A). For those patients in which pangenotypic regimens are not available, HCV genotype/subtype should guide treatment decisions.²

References

1. KDIGO Direct: Hepatitis C Guideline Update [Internet]. Brussels, Belgium: KDIGO. 2022 Feb [cited 2022 Feb 24]. Available from: <https://myemail.constantcontact.com/KDIGO-Direct.html?soid=1134196072483&aid=LBjCrRY4BwI>
2. KDIGO 2022 Clinical Practice Guideline Update for the Prevention, Diagnosis, Evaluation, and Treatment of Hepatitis C in Chronic Kidney Disease: Public Review Draft [Internet]. Brussels, Belgium: KDIGO. 2022 Feb [cited 2022 Feb 24]. Available from: <https://kdigo.org/wp-content/uploads/2022/02/KDIGO-2022-Hepatitis-C-Guideline-Update-Public-Review-Copy.pdf>

Summary

In conclusion, KDIGO has made many new guideline updates since 2020, and have also created innovative tools for healthcare providers to aid in the implementation of these updates. While KDIGO has announced that the 2012 Clinical Practice Guideline for the Evaluation and Management of CKD will be updated in 2022, they have yet to announce a release date of when these updates will be published. However, [KDIGO News](#) is a great resource to stay up to date on publication announcements!



The last “dose” ...

*“Oh what power we would have, if we
had the gift to see ourselves as others see
us.”*

Robert Burns (1759 to 1796), Poem “To a Louse”

Health Professional with a Question? Drugs – Therapeutics – Pharmacy Practice?

Please contact us. We can help resolve your issue.

Please call **344-844-4400** Monday-Friday 8:00 to 5:00 pm (some holidays excepted)
or visit our website, 24/7 at: <http://pharmacy.auburn.edu/di/>

*An electronic bulletin of drug and health-related news highlights, a service of ...
Auburn University, Harrison School of Pharmacy, Drug Information Center
• Phone 334-844-4400 • <http://pharmacy.auburn.edu/di/>
Bernie R. Olin, Pharm.D., Director
Archived issues are available at: <http://pharmacy.auburn.edu/di/auinformed.php>*

