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Приложение А1.

СОСТАВ РАБОЧЕЙ ГРУППЫ ПО РАЗРАБОТКЕ И ПЕРЕСМОТРУ КЛИНИЧЕСКИХ РЕКОМЕНДАЦИЙ

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18. Шило В.Ю. – к.м.н., доцент кафедры нефрологии, Московский государственный медико-стоматологический университет им. А.И. Евдокимова, председатель наблюдательного совета Ассоциации медицинских организаций нефрологии и диализа (АМОНД), медицинский директор сети диализных клиник Б. Браун Авитум в РФ, Москва.
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Конфликт интересов:

У трех членов рабочей группы (Гуревич К.Я., Ильин А.П., Шило В.Ю.) присутствовал потенциальный конфликт интересов, поскольку они работают в медицинских организациях частной формы собственности. У остальных членов рабочей группы при разработке настоящих клинических рекомендаций не возникло конфликта интересов, а именно персональной заинтересованности в получении лично либо через представителя компании материальной выгоды или иного преимущества, которое повлияло бы или могло повлиять на надлежащее исполнение ими профессиональных обязанностей.

Приложение А2.
МЕТОДОЛОГИЯ РАЗРАБОТКИ КЛИНИЧЕСКИХ РЕКОМЕНДАЦИЙ

В качестве основы для разработки клинических рекомендаций по ХБП 2019 были использованы рекомендации «Хроническая болезнь почек: основные принципы скрининга, диагностики, профилактики и подходы к лечению» 2011 г., а также международные рекомендации по проблеме. Процесс подготовки рекомендаций состоял из следующих этапов: выбор руководителей, членов рабочей группы (РГ) и секретариата; определение в ходе дискуссий наиболее важных для реальной клинической практики областей, которые должны покрывать рекомендации; определение частных вопросов для исследования и формулировки рекомендаций; разработки приемов поиска доказательной базы; формирование окончательного перечня рекомендаций и его структуры. Указания, представленные в настоящих рекомендациях, основаны на выполненном членами группы анализе исследований в нефрологии и смежных областях медицины, их систематических обзоров и мета-анализов, опубликованных до ноября 2020 г. Первоначальный проект (ноябрь, 2019 г.) впоследствие был подвергнут глубокой переработке с учетом полученных внешних комментариев и их обсуждения, рецензии специалистов Центра экспертизы и контроля качества медицинской помощи (получена в ноябре, 2020 г.), появления новой доказательной базы.

Основанная на позиции РГ стратегия подготовки проекта состояла в том, чтобы:

1) рекомендации по диагностическим, профилактическим и лечебным интервенциям максимально отражали их вероятное влияние на пациент-ориентированные исходы – неблагоприятные фатальные и нефатальные клинические события, а также качество жизни;

2) на основе рекомендаций была возможна максимальная персонификация лечебно-диагностического процесса.

Члены РГ стремились, чтобы каждая рекомендация базировалась на максимально возможных уровнях достоверности и убедительности рекомендаций. Тем не менее, рабочая группа сочла необходимым оставить ряд рекомендаций, формально имеющих низкий уровень доказательности или основанных на экспертной оценке, с учетом многолетнего опыта ведения пациентов соответствующего профиля и того, что эти рекомендации могут иметь существенное значение для практической работы.

Для оценки качества и силы рекомендации использовали уровни достоверности доказательств и убедительности рекомендаций (табл.1-3).

Целевая аудитория данных клинических рекомендаций:

20. Врач-нефролог.
21. Врач-терапевт.
22. Врач-терапевт участковый.
23. Врач общей практики (семейный врач).
24. Врач-эндокринолог.
25. Врач-кардиолог.
26. Врач-диетолог.
27. Врач-хирург; врач-сердечно-сосудистый хирург.

Таблица 1

Шкала оценки уровней достоверности доказательств (УДД)для методов диагностики (диагностических вмешательств)

УДД	Расшифровка
1	Систематические обзоры исследований с контролем референсным методом или систематический обзор рандомизированных клинических исследований с применением мета-анализа
2	Отдельные исследования с контролем референсным методом или отдельные рандомизированные клинические исследования и систематические обзоры исследований любого дизайна, за исключением рандомизированных клинических исследований, с применением мета-анализа
3	Исследования без последовательного контроля референсным методом или исследования с референсным методом, не являющимся независимым от исследуемого метода или нерандомизированные сравнительные исследования, в том числе когортные исследования
4	Несравнительные исследования, описание клинического случая
5	Имеется лишь обоснование механизма действия или мнение экспертов

Таблица 2

Шкала оценки уровней достоверности доказательств (УДД)для методов профилактики, лечения и реабилитации (профилактических, лечебных, реабилитационных вмешательств)

УДД	Расшифровка
1	Систематический обзор РКИ с применением мета-анализа
2	Отдельные РКИ и систематические обзоры исследований любого дизайна, за исключением РКИ, с применением мета-анализа
3	Нерандомизированные сравнительные исследования, в т.ч. когортные исследования
4	Несравнительные исследования, описание клинического случая или серии случаев, исследования «случай-контроль»
5	Имеется лишь обоснование механизма действия вмешательства (доклинические исследования) или мнение экспертов

Таблица 3

Шкала оценки уровней убедительности рекомендаций(УУР) для методов профилактики, диагностики, лечения и реабилитации (профилактических, диагностических, лечебных, реабилитационных вмешательств)

УУР	Расшифровка
A	Сильная рекомендация (все рассматриваемые критерии эффективности (исходы) являются важными, все исследования имеют высокое или удовлетворительное методологическое качество, их выводы по интересующим исходам являются согласованными)
B	Условная рекомендация (не все рассматриваемые критерии эффективности (исходы) являются важными, не все исследования имеют высокое или удовлетворительное методологическое качество и/или их выводы по интересующим исходам не являются согласованными)
C	Слабая рекомендация (отсутствие доказательств надлежащего качества (все рассматриваемые критерии эффективности (исходы) являются неважными, все исследования имеют низкое методологическое качество и их выводы по интересующим исходам не являются согласованными)

Порядок обновления клинических рекомендаций.

Механизм обновления клинических рекомендаций предусматривает их систематическую актуализацию – не реже чем один раз в три года, а также при появлении новых данных с позиции доказательной медицины по вопросам диагностики, лечения, профилактики и реабилитации конкретных заболеваний, наличии обоснованных дополнений/замечаний к ранее утверждённым КР, но не чаще 1 раза в 6 месяцев.

Приложение А3.

СПРАВОЧНЫЕ МАТЕРИАЛЫ, ВКЛЮЧАЯ СООТВЕТСТВИЕ ПОКАЗАНИЙ К ПРИМЕНЕНИЮ И ПРОТИВОПОКАЗАНИЙ, СПОСОБОВ ПРИМЕНЕНИЯ И ДОЗ ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ, ИНСТРУКЦИИ ПО ПРИМЕНЕНИЮ ЛЕКАРСТВЕННОГО ПРЕПАРАТА

1. Схемы дозирования гепарина натрия в ходе процедуры гемодиализа** [573]

Стандартная доза	Исходная: 50 МЕ/кг Поддерживающая: 500-1500 МЕ/час, остановить за 30-60 минут до окончания	Целевое активированное время свертываемости (АВС) – 180% от исходного уровня. При повышенной кровоточивости или признаках тромбоза изменить дозу на 500 МЕ/час
Низкая доза	Исходная: 10-25 МЕ/кг Поддерживающая: 250-1000 МЕ/час, остановить за 30-60 минут до окончания	Целевое АВС – 140-150% от исходного уровня. При повышенной кровоточивости исключить нагрузочную дозу. При персистирующей кровоточивости или тромбообразовании изменить дозу инфузии соответственно на 250 МЕ/час

2. Схемы применения других антикоагулянтов из «Группы гепарина» [574]

Далтепарин натрия	Низкий риск кровотечения	85 анти-Ха-МЕ/кг как болюс (ГД до 4 час) или исходный болюс 30-35 МЕ/кг, поддерживающая доза 10-15 МЕ/кг/час (целевой анти-Ха ≥ 0,5 МЕ/мл
	Высокий риск кровотечения	исходный болюс 5-10 МЕ/кг, поддерживающая доза 4-5 МЕ/кг/час (целевой анти-Ха 0.2-0.3; макс. – 0,4 МЕ/мл)
Эноксапарин натрия**	Низкий риск кровотечения	100 анти-Ха-МЕ/кг как болюс, при образовании сгустков повторить 50-100 анти-Ха-МЕ/кг
	Высокий риск кровотечения	50 анти-Ха-МЕ/кг при использовании двухпросветного катетера, 75 анти-Ха-МЕ/кг при использовании однопросветного катетера
Надропарин кальция	Обычный риск кровотечения	ГД до 4 час. Болюсно: при весе больного <50 кг 2850 анти-Ха-МЕ, 50-69 кг – 3800 анти-Ха-МЕ, >70 кг – 5700 анти-Ха-МЕ

3. ГОСТ Р 52556-2006. Государственный стандарт. Вода для гемодиализа. http://docs.cntd.ru/document/gost-r-52556-2006

4. Требования к бактериологической чистоте диализирующей жидкости и сверхчистой диализирующей жидкости

Параметр	Диализирующая жидкость*	Сверхчистая диализирующая жидкость**
Число колониеформирующих единиц/мл	менее 100	менее 0,1
Концентрация бактериального эндотоксина ЭЕ/мл	менее 0,25	менее 0,03

Примечание: * – Российский и международный стандарты; ** – международный стандарт.

5. Показания и противопоказания для выбора перитонеального диализа у пациентов с ХБП С5

Показания для выбора метода ПД
Пациенты молодого возраста – кандидаты на трансплантацию почки
Осознанный выбор пациента и предпочтение проведения диализной терапии в домашних условиях
Стремление как можно дольше сохранить остаточную функцию почек
Заболевания и состояния, которые могут влиять на возможность перемещения пациентов и транспортировки их в диализный центр или удаленность места жительства от диализного центра
Объективизированное отсутствие возможности создания безопасного сосудистого доступа для гемодиализа
Тяжелые, не корригируемые доступными методами, синдиализные (возникающие во время сеанса ГД/ГДФ) сердечно-сосудистые осложнения, которые могут повлиять на переносимость процедуры ГД/ГДФ (в частности, гемодинамически значимые нарушения ритма сердца, не обусловленные электролитным дисбалансом, тяжелая интрадиализная гипотензия)
Высокий риск декомпенсации хронической сердечной недостаточности после формирования АВФ
Абсолютные противопоказания
Информированный отказ пациента от лечения ПД
Активные воспалительные заболевания органов брюшной полости
Выраженная ишемическая болезнь кишечника

Распространенные злокачественные онкологические заболевания брюшной полости
Спаечная болезнь или выраженный спаечный процесс в брюшной полости (большой хирургический анамнез)
Врожденные (аномалии развития) или приобретенные анатомические дефекты передней брюшной стенки и/или брюшной полости и диафрагмы
Тяжелые хронические обструктивные легочные заболевания (III или IV стадия ХОБЛ по GOLD 2017)
Относительные противопоказания
Низкая ОФП (СКФ <2 мл/мин), особенно при наличии олигурии и/или выраженной уремической интоксикации
Большая поверхность тела (>2 м^2, особенно при низкой ОФП) или выраженное ожирение
Поликистоз почек (при чрезмерно больших размерах почек)
Наличие энтеростом и/или уростом
Выраженная белково-энергетическая недостаточность
Отсутствие достаточного интеллекта и мотивации
Алкоголизм, наркомания, тяжелые психические расстройства и деменция
Выраженное нарушение моторики ЖКТ при сахарном диабете
Выраженные нарушения двигательной активности рук (при отсутствии помощника)
Хронический панкреатит с частыми обострениями
Дивертикулит в анамнезе
Массивная цитостатическая и/или глюкокортикоидная терапия
Тяжелые социальные или санитарно-гигиенические условия жизни
Резкое снижение зрения (при отсутствии помощника)
Множественные повторные грыжи передней брюшной стенки

Примечание: ХОБЛ – хроническая обструктивная болезнь легких.

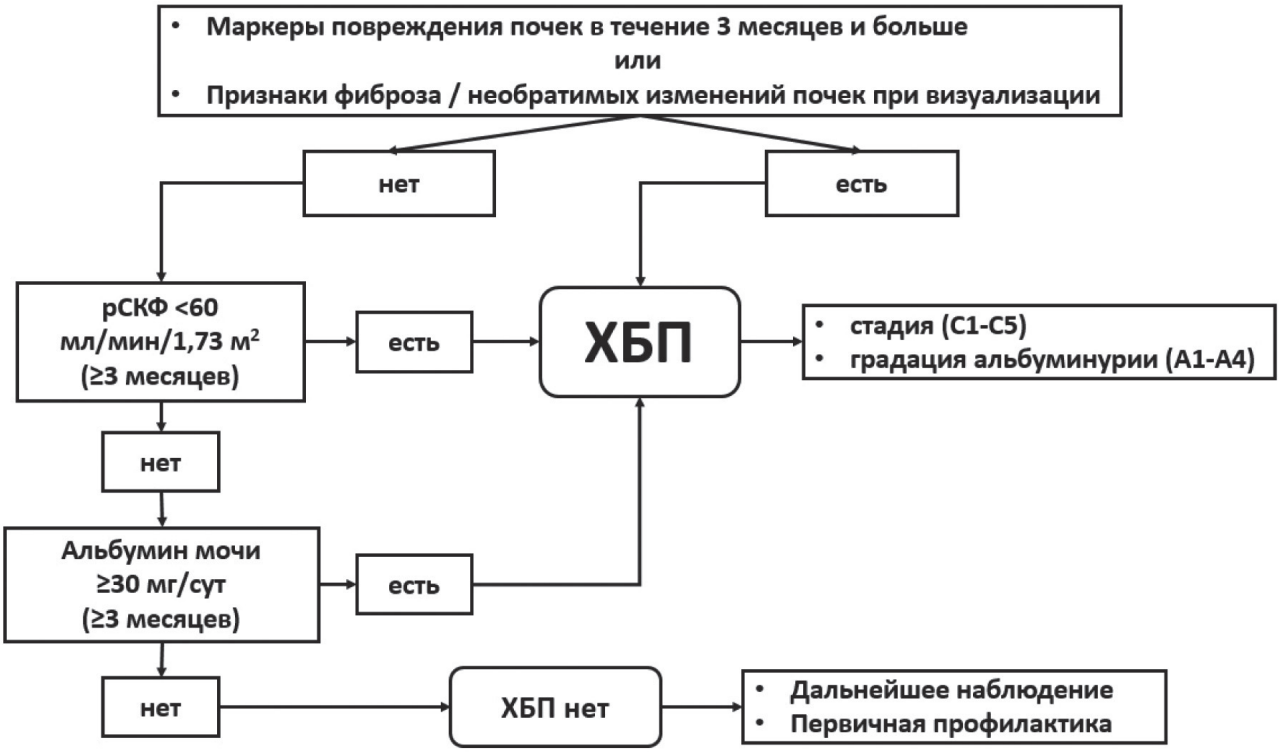
6. Состав «стандартных» растворов для ПД**

Компонент, единица измерения	**Варианты растворов для ПД****		
	1	**2**	**3**
Натрий, ммоль/л	130-134	130-134	130-134
Калий, моль/л	0,0	0,0	0,0
Кальций, ммоль/л (мэкв/л)	1,25-1,75 (2,5-3,5)	1,25-1,75 (2,5-3,5)	1,25-1,75 (2,5-3,5)
Магний, ммоль/л	0,5-1,5	0,5-1,5	0,5-1,5
Хлор, ммоль/л	96-102	96-102	96-102
Лактат, ммоль/л	35-40	35-40	35-40
Глюкоза, г/дл	1,36	2,27	3,86
Осмолярность, мосм/л	344-358	395-401	483-511

Приложение Б.

АЛГОРИТМЫ ДЕЙСТВИЙ ВРАЧА

1. Алгоритм первичной диагностики хронической болезни почек



Приложение В.
ИНФОРМАЦИЯ ДЛЯ ПАЦИЕНТА

1. Степень ограничения минеральных веществ в рационе в зависимости от стадии ХБП

Стадия	Расчетная СКФ, мл/мин/1,73 м^2	Суточная потребность в ингредиентах (г/сутки)
1	≥ 90	K 4,0-5,0 Na < 2,4 P 1,0-1,2
2	60-89	K 4,0-5,0 Na < 2,4 P 1,0-1,2
3а	45-59	K 2,0-3,0* Na < 2,4 P 0,8-1,0
3б	30-44	K 2,0-3,0* Na < 2,4 P 0,8-1,0
4	15-29	K 2,0-3,0* Na < 2,4 P 0,8
5	<15 диализ	K 2,0-3,0 Na < 2,4 P 0,8

Примечание: * – при наличии гиперкалиемии (концентрация K в сыворотке крови >5,5 ммоль/л).

2. Содержание нутриентов в пищевых продуктах

Продукт (100г)	Белок, г	Фосфор, мг	Соотношение фосфор/белок, мг/г	Калий, мг	Натрий, мг
Молочные продукты					
Соевое молоко	3,2	47	15	191	3
Коровье молоко 2%	3,2	85	27	166	46
Обезжиренное молоко	3,3	88	27	174	45
Цельное молоко	3,1	92	30	157	48
Козье молоко	3,4	103	30	185	45
Низкокалорийный мягкий сыр	14,2	150	11	190	480
Зернистый творог	12,3	150	12	88	230
Зрелый сыр	35,8	470	13	82	620
Сыр бри	17,2	303	18	119	593
Чеддер	26,0	470	18	100	700
Моцарелла	19,5	428	22	67	373
Эдам	20,7	462	22	-	-
Обезжиренный натуральный йогурт	4,3	109	25	187	57
Обезжиренный сладкий йогутр	4,5	123	27	191	66
Йогурт с фруктами	2,7	75	28	117	39
18% сливки	2,5	65	26	130	45
Яйцо					
Яичный белок	10,5	15	1	142	160
Яичный желток	16,5	520	32	197	50
Яйцо целиком	12,5	200	16	130	140
Ветчина					
Иберийский хамон	43,2	158	4	153	1110
Ветчина вареная	19,0	239	13	270	970
Говядина					
Вырезка	20,2	200	10	350	60
Телятина	17,0	200	12	350	60

Ливер	21,1	358	17	325	96
Свинина					
Шейка	18,0	151	9	212	63
Вырезка	21,0	230	11	420	53
Ливер	21,4	350	16	330	87
Птица					
Куриные крылышки с кожей	18,3	132	7	156	73
Куриные грудки с кожей	23,1	196	9	255	65
Грудка индейки с кожей	24,1	210	9	333	46
Утка	19,7	200	10	280	80
Бедро индейки с кожей	18,9	211	11	201	71
Кролик					
Кролик на свободном выгуле	20,7	259	13	404	57
Баранина					
Баранина	15,6	170	11	320	75
Рыба и морепродукты					
Краб	19,5	160	8	270	370
Креветки	22,4	215	10	221	305
Треска	18,2	180	10	340	68
Скумбрия	15,4	157	10	420	39
Килька	17,6	182	10	331	116
Тунец	22,0	230	11	400	47
Окунь	18,6	198	11	333	47
Морской окунь	19,4	210	11	255	80
Кальмар	14,0	159	11	316	137
Хек	12,0	142	12	294	101
Палтус	16,1	190	12	290	114
Ставрида	18,7	244	13	386	84
Радужная форель	15,7	208	13	250	58
Семга	18,4	250	14	310	98
Камбала	16,5	260	16	230	100
Хек серебристый	11,8	190	16	270	100
Мидия	10,8	236	22	92	210
Сардина	18,1	475	26	24	100
Колбаса					
Кровяная колбаса	19,5	80	4	210	1060
Сырокопченая колбаса	27,0	270	10	180	1060
Сосиски	12,7	173	14	170	900
Зерновые					
Манная крупа	12,6	143	11	193	3
Слоеное тесто	4,9	57	12	67	340
Пшеничная мука	10,0	120	12	135	3
Пшеничные шоколадные хлопья	8,0	100	13	400	400
Паста из муки высшего сорта	12,5	167	13	236	5
Белый рис	7,0	100	14	110	6
Паста из цельнозерновой муки	13,4	258	19	215	8
Мюсли	10,3	289	28	-	-
Корнфлекс + мюсли	6,0	170	28	0	600
Коричневый рис	7,5	303	40	223	6
Кукурузный крахмал	0,3	13	50	3	9
Бобовые					
Чечевица	24,8	256	10	463	227
Горох	21,6	33	15	900	40
Нут	19,3	310	16	1000	30
Фасоль пинто	23,6	407	17	1406	24
Соевые бобы	35,9	660	18	1730	5
Белая фасоль	21,1	426	20	1337	15
Лимская фасоль	26,1	590	23	1090	11

Хлеб					
Белый хлеб	8,3	90	11	120	650
Сдобная булка	7,5	150	20	110	550
Орехи					
Грецкий орех	14,0	304	22	690	3
Семечки подсолнуха	27,0	651	24	710	3
Миндаль	19,0	525	28	767	10
Лесной орех	12,0	333	28	636	6
Выпечка					
Слоеное печенье пальмера	5,0	50	10	76	431
Круассан	7,5	95	13	136	492
Печенье Мария	7,1	90	13	110	217
Обычная выпечка	7,0	91	13	78	178
Печенье с шоколадными чипсами	6,2	82	13	92	220
Пончик	6,1	81	13	102	443
Цельнозерновой крекер	10,0	133	13	200	300
Слойка	5,7	79	14	84	294
Круассан с шоколадом	5,6	87	16	170	110
Обычное печенье	6,8	124	18	170	410
Оладьи	4,6	108	24	146	2
Пончик с шоколадом	3,7	107	29	103	441
Печенье мадлен	6,1	231	38	88	211
Шоколад					
Темный шоколад с миндалем	8,2	219	27	460	106
Молочный шоколад	9,2	261	28	465	58
Молочный шоколад с миндалем	8,6	246	29	441	106
Белый шоколад	8,0	230	29	350	110
Темный шоколад	4,7	181	39	360	12
Соусы					
Низкокалорийный майонез	1,0	1	1	10	750
Соус Болоньез	8,0	79	10	310	430
Соус Барбекю	1,8	20	11	170	810
Кетчуп	3,4	40	12	480	910
Концентрированный суп в пакете	11,0	194	18	319	613
Соус Бешамель	4,1	110	27	160	400
Напитки					
Лимонад	0,5	11	22	82	2
Игристое вино	0,2	7	35	48	4
Безалкогольное пиво	0,4	20	53	40	3
Темное пиво 8-9°	0,6	34	56	92	12
Розовое вино	0,1	6	60	75	4
Красное вино	0,2	14	61	93	4
Пиво	0,5	55	110	37	4
Белое вино	0,1	15	150	82	2
Тоник	0	0	-	0	2
Коньяк	0	0	-	2	2
Джин	0	0	-	0	2
Сидр	0	3	-	72	7
Ром	0	5	-	2	1
Виски	0	5	-	3	-
Кока-кола лайт	0	12	-	4	7
Кока-кола	0	15	-	1	8
Другие продукты					
Консервированный тунец в масле	26,2	200	8	267	347
Лазанья	6,3	93	15	159	181
Готовая пицца	8,2	179	22	201	520
Консервированные тефтели	6,8	243	36	614	929

3. Пищевые добавки, содержащие фосфаты (ФПД)

Индекс	Название	Назначение	Продукты, содержащие ФПД
E 338	Ортофосфорная кислота	Подкислитель, усилитель вкуса, стабилизатор, секвестрант	Напитки
E 339	Натрия фосфат	Подкислитель, эмульгатор, желирующий агент	Кола, желатин, мягкие сыры, растворимые порошковые напитки
E340	Калия фосфат	Эмульгатор, стабилизатор	Растворимые порошковые напитки, мягкие сыры. чипсы
E 341	Кальция фосфат	Разрыхлитель, секвестрант	Чипсы, напитки, детское питание, жевательная резинка
E 450	Дифосфаты и пирофосфаты Дикальция фосфат	Восполнение кальция и фосфора, загуститель	В детском питании, порошки для приготовления напитков (растворимый кофе, растворимый сок, молоко и т.д.)
	Динатрия фосфат	Эмульгатор, стабилизатор кислотности, модификатор белка	Зерновые хлопья для зватраков, сыр, конденсированное молоко, питьевые сливки, крахмал, витамины, детское питание
E 451	Тринатрия фосфат	Загуститель, комплексообразователь, контроль кислотности, стабилизатор цвета	Рыбные полуфабрикаты, мягкие сыры и сыроподобные продукты, изотонические газированные напитки, хлопья для завтраков.
E 452	Полифосфаты	Эмульгатор, усилитель вкуса, формирующий агент, стабилизатор, антиоксидант	Мясные полуфабрикаты, морепродукты, замороженные десерты, мороженое, мягкие сыры, сиропы

Приложение Г.

ШКАЛЫ ОЦЕНКИ, ВОПРОСНИКИ И ДРУГИЕ ОЦЕНОЧНЫЕ ИНСТРУМЕНТЫ СОСТОЯНИЯ ПАЦИЕНТА, ПРИВЕДЕННЫЕ В КЛИНИЧЕСКИХ РЕКОМЕНДАЦИЯХ

1. Расчет СКФ по формуле CKD-Epidemiology Collaboration 2009 [105,108]

СКФ = 141*мин (Креатинин в сыворотке крови / каппа, 1)^{альфа}*макс (Креатинин в сыворотке крови / каппа, 1)$^{1.209}$*0.993^{Возраст}*Пол*Раса,

для женщин используются следующие значения:

пол = 1.018; альфа = – 0.329; каппа = 0.7;

для мужчин используются следующие значения: пол = 1; альфа = – 0.411;

каппа = 0.9;

для представителей негроидной расы: коэффициент «раса» = 1.159.

Калькулятор СКФ: https://www.kidney.org/professionals/KDOQI/gfr_calculator

2. Расчет СКФ по формуле CKD-EPI Cystatin C Equation 2012 [111,113]

СКФ = 133*мин (Цистатин С в сыворотке крови/0.8, 1)$^{-0.499}$*макс (Цистатин С в сыворотке крови/0.8, 1)$^{-1.328}$*0.996^{Возраст}*Пол,

для женщин: пол = 0.932.

Калькулятор СКФ:
https://www.kidney.org/professionals/KDOQI/gfr_calculator

3. Формула для расчета эквилибрированного показателя eKt/V по величине spKt/V с учетом перераспределения мочевины [534]

eKt/V = spKt/V (0,6 × spKt/V/t) + 0,03 (для артерио-венозного доступа),

eKt/V = spKt/V (0,47 × spKt/V/t) + 0,02 (для вено-венозного доступа),

где spKt/V – показатель, рассчитываемый по однокамерной модели с изменяемым объемом.

Для определения spKt/V в клинической практике используется формула с натуральным логарифмом, основанная на однокамерной модели с изменяемым объемом распределения мочевины:

spKt/V = – ln(Ct/Co – 0,008 × t) + (4 – 3,5 × Ct/Co) × 0,55 dBW/V

или, принимая, что V = 0,55 BW:

spKt/V = – ln(Ct/Co – 0,008 × t) + (4 – 3,5 × Ct/Co) × dBW/BW

где K – клиренс диализатора в конкретных условиях;

t – продолжительность диализа в минутах;

V – объем распределения мочевины;

Co – исходная концентрация вещества (мочевины);

Ct – концентрация вещества в данный момент времени (при определении

Kt/V за процедуру – концентрация мочевины по окончании сеанса лечения);

BW – вес пациента;

dBW – изменение веса пациента в ходе процедуры, что приблизительно равно объему ультрафильтрации.

4. Принципы корректировки дозы диализа по остаточной функции почек (ОФП)

Поскольку остаточный почечный клиренс (Kru) является непрерывным, а клиренс при диализе – прерывистым (где Kt/V относится к клиренсу во время одного сеанса диализа), количество обоих не может быть простой суммой. При ориентировочном расчете снижения дозы диализа с учетом ОФП, может быть использовано три подхода.

Преобразование клиренса мочевины (Kru) в эквивалент eKt/V (комбинированный eKt/V)

ОФП, измеренная по клиренсу мочевины, преобразуется в эквивалент eKt/V за сеанс ГД/ГДФ путем умножения на коэффициент F (который эмпирически увеличивает время, в течение которого измеряется остаточный клиренс, чтобы учесть его более высокую эффективность по сравнению с кратковременной процедурой ГД/ГДФ). Значение F зависит от частоты диализа (F=5500 при частоте 3 раза/нед).

Комбинированный eKt/V = eKt/V (диализ) + eKt/V (ОФП);

eKt/V (ОФП) = Kru * F/Vu,

где: eKt/V(диализ) рассчитывается обычным способом (см. «Приложение Г», п.3),

Vu – объем распределения мочевины (мл) (~580 * масса тела).

Преобразование Kt/V в эквивалентный почечный клиренс (EKRc)

Альтернативный метод – преобразовать Kt/V за сеанс в эквивалентный (непрерывный) почечный клиренс, а затем добавить его к Kru. Кинетические оценки комбинированного диализа и почечного клиренса мочевины (нормализованного к объему) назвали «эквивалентным почечным клиренсом мочевины» (EKRc). В отсутствие остаточной функции целевое значение eKt/V, равное 1,2, соответствует EKRc 13 мл/мин. Для трехкратного ГД/ГДФ EKRc рассчитывается по формуле:

EKRc (мл/мин) = 1 + (10 * eKt/V).

С помощью этого метода eKt/V подбирается таким образом, чтобы сумма Kru и EKRc составляла 10-13 мл/мин.

Преобразование eKt/V и Kru в недельную диализную дозу (stdKt/V)

Частоту и дозу ГД/ГДФ можно преобразовать в эквивалентный недельный клиренс – «стандартный Kt/V» (stdKt/V), на основе кинетических моделей, которые связывают генерацию мочевины со средним недельным уровнем мочевины перед диализом. Это позволяет соотносить частые процедуры ГД со стандартным режимом (например, stdKt/V=2,1 эквивалентен (с точки зрения клиренса низкомолекуляных веществ веществ) трехразовому ГД/ГДФ с eKt/V=1,2 за 1 процедуру). Остаточная функция может быть включена в stdKt/V (иногда называемую «Total Standard Kt/V») с помощью доступных формул [549,550].

5. Оценка остаточной функции почек у пациентов, получающих ПД

Для учета остаточной функции почек у пациентов на ПД необходимо проводить ее лабораторное определение со сбором мочи за сутки и исследованием клиренсов мочевины и креатинина по формуле:

$$\text{СКФ} = \frac{\text{остаточный клиренс по } \boldsymbol{Ur} + \text{остаточный клиренс по } \boldsymbol{Cr}}{\mathbf{2}}$$

$$\text{остаточный клиренс по } \boldsymbol{Ur} = \frac{\text{концентрация } \boldsymbol{Ur} \text{ в моче}}{\text{концентрация } \boldsymbol{Ur} \text{ в сыворотке}} \times \frac{\text{объем мочи в мл}}{\mathbf{1440} \text{ мин (в сутках)}}$$

$$\text{остаточный клиренс по } \boldsymbol{Cr} = \frac{\text{концентрация } \boldsymbol{Cr} \text{ в моче}}{\text{концентрация } \boldsymbol{Cr} \text{ в сыворотке}} \times \frac{\text{объем мочи в мл}}{\mathbf{1440} \text{ мин (в сутках)}}$$

где Ur – мочевина, Cr – креатинин.

6. Оценка транспортных свойств брюшины

Для оценки транспортных характеристик брюшины используется изучение отношения концентрации вещества в диализате к концентрации его в плазме – теста перитонеального равновесия (ТПР). Определение в диализате содержания глюкозы, креатинина, мочевины, K и Na производят сразу же после введения диализирующего раствора с 2,27% глюкозы (2,5% декстрозы) в брюшную полость (проба 0), через 2 и 4 часа (проба 2 и 4). Плазму забирают через 2 часа от начала процедуры и определяют в ней концентрацию креатинина, мочевины, K, Na. Транспорт глюкозы рассчитывают как фракционное ее исчезновение (абсорбцию) из диализата (D4/D2; D4/D0), а креатинина, мочевины и электролитов по нарастанию соотношения между концентрацией каждого вещества в диализате и плазме (D0/P; D2/P; D4/P).

По результатам ТПР выделяют 4 категории транспортеров:

<u>A. По уровню D/P по креатинину:</u>
низкие – 0,65-0,50;
очень низкие – 0,50-0,34;
высокие – 0,65-0,81;
очень высокие транспортеры – 0,81-1,03.

<u>B. По уровню D/P по глюкозе:</u>
низкие – 0,49-0,61;
очень низкие – 0,38-0,49;
высокие – 0,26-0,38;
очень высокие транспортеры – 0,26-0,12.

7. Основные требования к определению адекватности ПД:

1	Определение мочевины и креатинина следует проводить у пациентов, находящихся в клинически стабильном состоянии
2	Исследование диализата для определения креатинина и мочевины не должно производиться ранее, чем через 1 месяц после перенесенного перитонита
3	Забор образца сливаемого раствора для исследования креатинина и мочевины не производится при сбоях во время проведения процедуры АПД
4	Образец сливаемого раствора для исследования креатинина и мочевины берется из контейнера после тщательного перемешивания и взвешивания его содержимого
5	Мочу необходимо собирать за сутки, а при малом ее количестве время сбора должно быть увеличено до 48 часов