BC-CfE BOOST
Best-Practices in Oral Opioid agoniSt Therapy Provincial Collaborative

The BOOST Journey

Hancke de Kock

Medical Lead

Interior Health

Interior Health

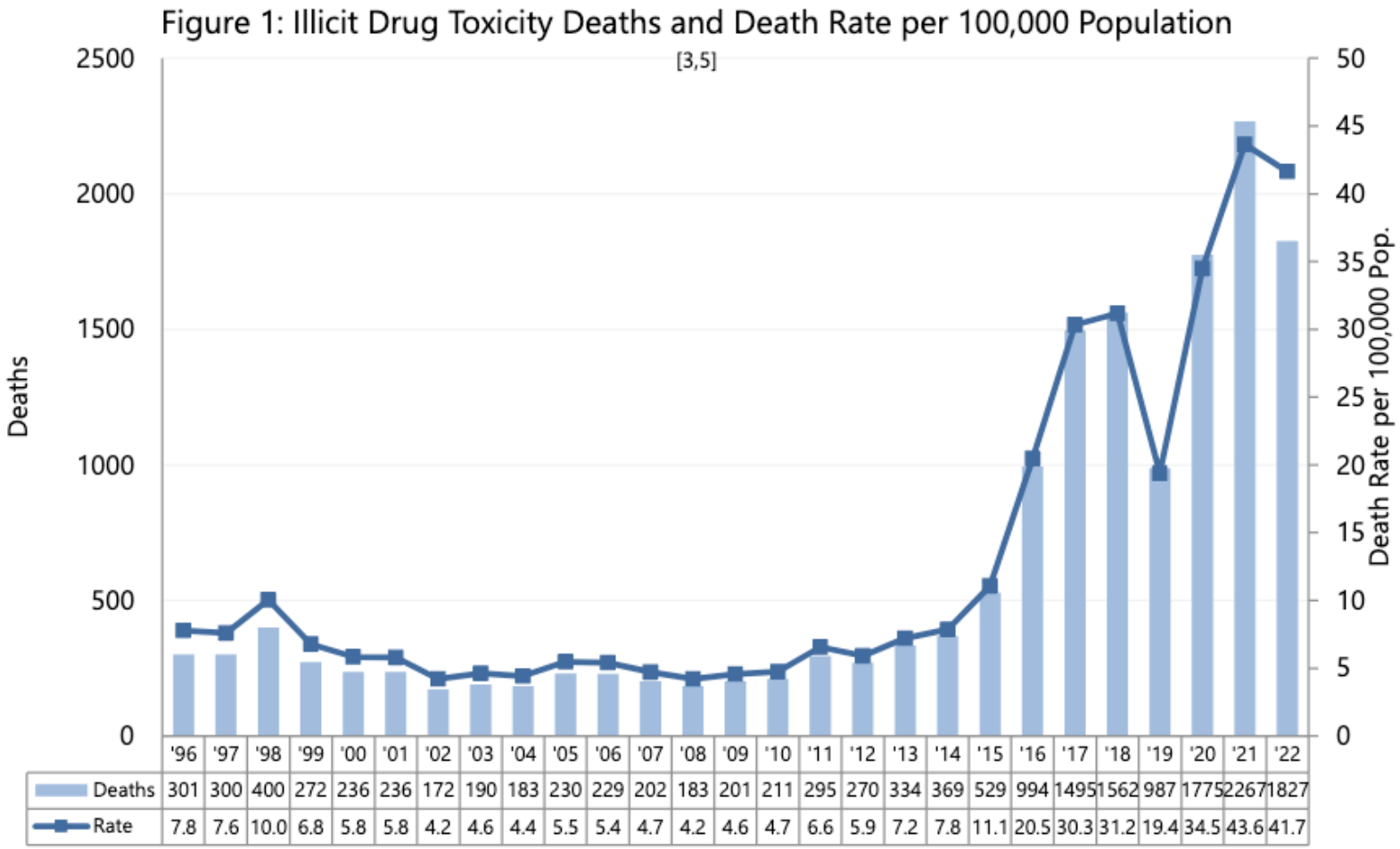
Outline

- The science
- Quality improvement journey
- Accomplishments to date
- Future opportunities
- Summary

The Problem:

- Complex
- Toxic drug supply
- Poor retention in care and treatment

The Opioid Crisis: Toxic Drug Supply



	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22
Deaths	301	300	400	272	236	236	172	190	183	230	229	202	183	201	211	295	270	334	369	529	994	1495	1562	987	1775	2267	1827
Rate	7.8	7.6	10.0	6.8	5.8	5.8	4.2	4.6	4.4	5.5	5.4	4.7	4.2	4.6	4.7	6.6	5.9	7.2	7.8	11.1	20.5	30.3	31.2	19.4	34.5	43.6	41.7

~ 6 deaths/day in BC
~1 death/day in IH

* For every fatal overdose, there are approximately 25-50 non-fatal near miss events (Darke & Farrell, 2014)

https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf

Illicit Drug Toxicity Deaths by HA

BC Coroners Service

Illicit Drug Toxicity Deaths in BC
January 1, 2012 to October 31, 2022

Health Authority Data:

Table 11: Illicit Drug Toxicity Deaths by Health Authority, 2012-2022[3,6]

HA	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Interior	31	54	47	64	169	246	236	140	289	375	313
Fraser	104	106	126	208	335	494	524	326	588	781	547
Vancouver Coastal	72	95	120	160	276	447	453	286	490	626	511
Island	45	60	55	72	162	242	248	168	273	330	313
Northern	18	19	21	25	52	66	101	67	135	155	143
BC	270	334	369	529	994	1,495	1,562	987	1,775	2,267	1,827

Table 12: Illicit Drug Toxicity Death Rates by Health Authority per 100,000, 2012-2022[3,5,6]

HA	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Interior	4.3	7.4	6.3	8.4	22.0	31.5	29.6	17.3	35.4	45.7	45.3
Fraser	6.2	6.2	7.3	11.8	18.6	26.9	28.0	17.1	30.4	39.9	33.0
Vancouver Coastal	6.4	8.3	10.4	13.7	23.3	37.4	37.4	23.3	39.6	50.2	48.6
Island	5.9	7.8	7.0	9.0	19.9	29.5	29.7	19.8	31.8	38.1	42.7
Northern	6.3	6.5	7.1	8.5	17.8	22.5	34.1	22.4	45.0	51.2	56.1
BC	5.9	7.2	7.8	11.1	20.5	30.3	31.2	19.4	34.5	43.6	41.7

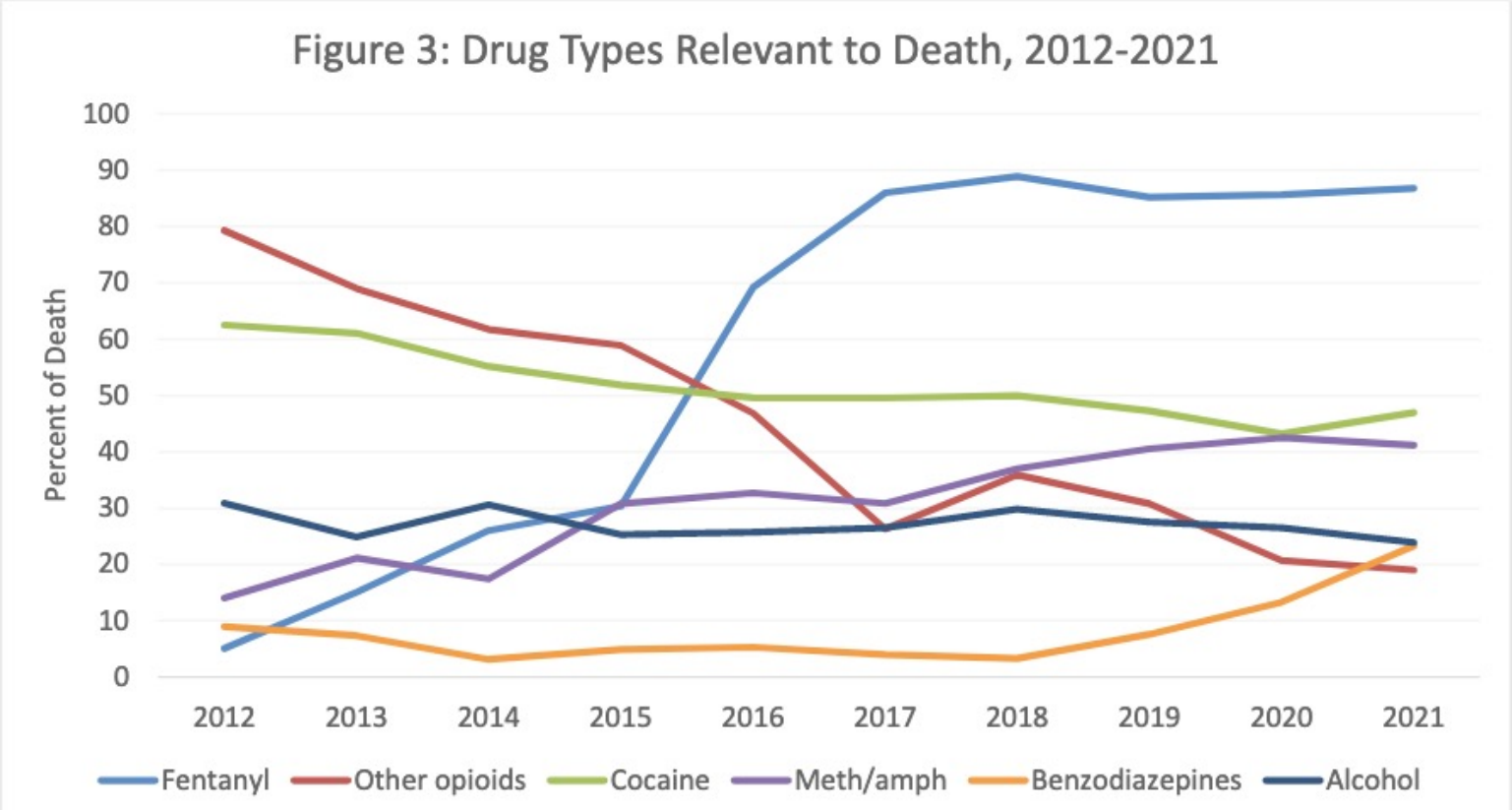
In the past 10 years, the number of deaths and death rates are ~10X higher than previous years

https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf

Drug Types Relevant to Death

BC Coroners Service

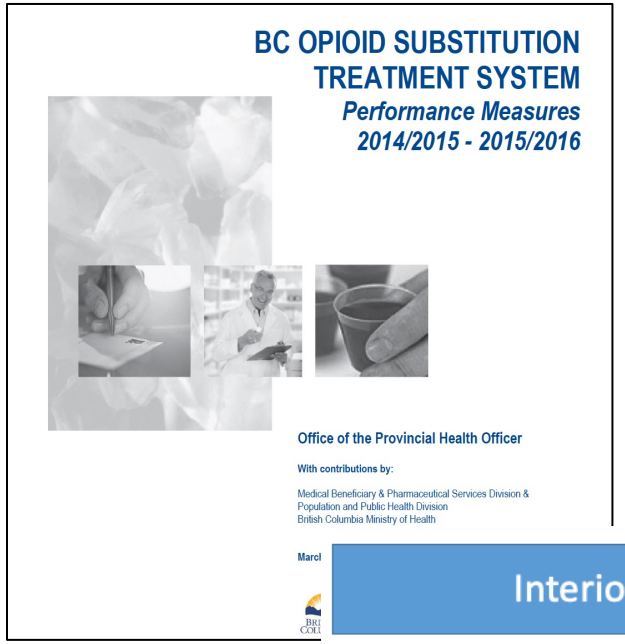
Illicit Drug Toxicity Deaths in BC
January 1, 2012 to October 31, 2022



Predominantly driven by Fentanyl
Benzos a concern

https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf

Gaps in care in our system



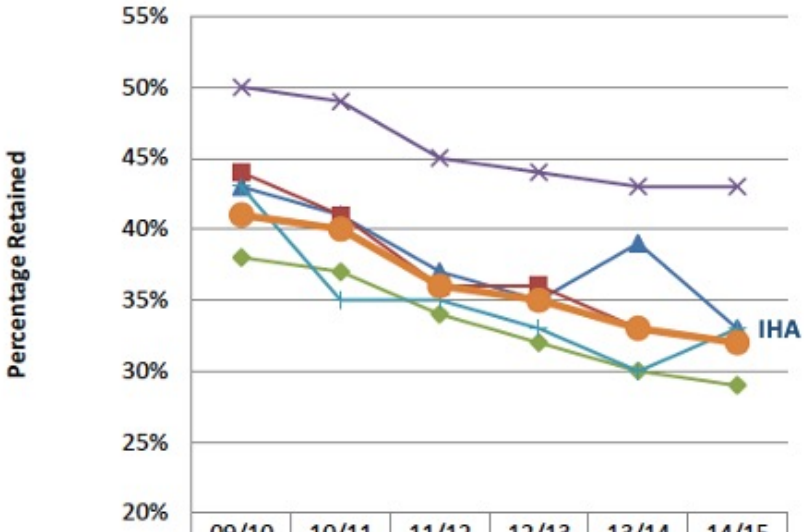
Interior Health

53% Patients receiving stabilization dose of methadone >60 mg. Down 4 % since 2010

45% People started on methadone retained at 6 months. Down 8 % since 2010

33% People started on methadone retained at 12 months. Down 10 % since 2010

Figure 15b. Percentage of People Started on Methadone Maintenance Treatment Retained at 12 Months, by Health Authority, BC, 2009/2010 to 2014/2015[h]



	09/10	10/11	11/12	12/13	13/14	14/15
IHA	43%	41%	37%	35%	39%	33%
FHA	44%	41%	36%	36%	33%	32%
VCHA	38%	37%	34%	32%	30%	29%
IslHA	50%	49%	45%	44%	43%	43%
NHA	43%	35%	35%	33%	30%	33%
BC Total	41%	40%	36%	35%	33%	32%

https://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/bc-ost-system-measures-2013-2014.pdf

Gaps in Care

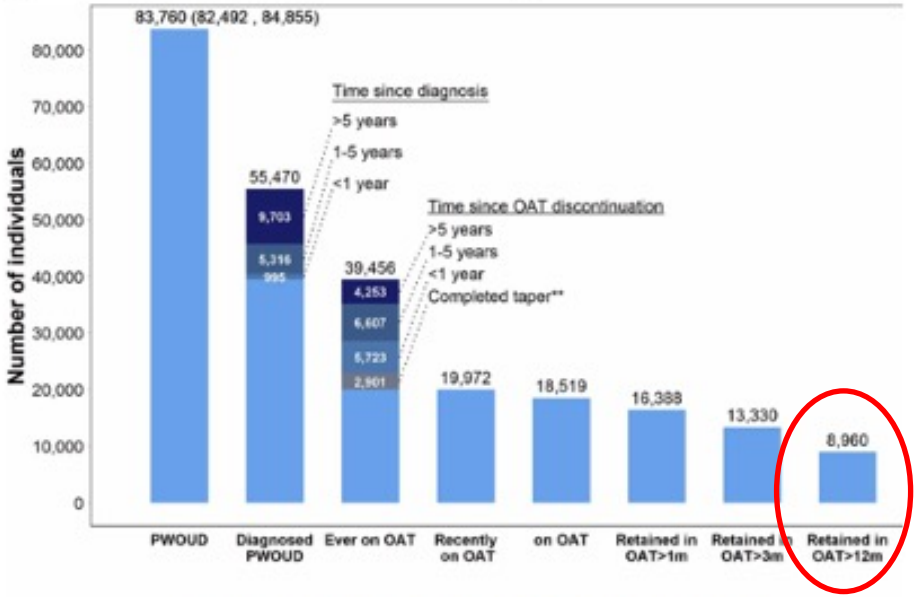
Drug and Alcohol Dependence 233 (2022) 109375

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

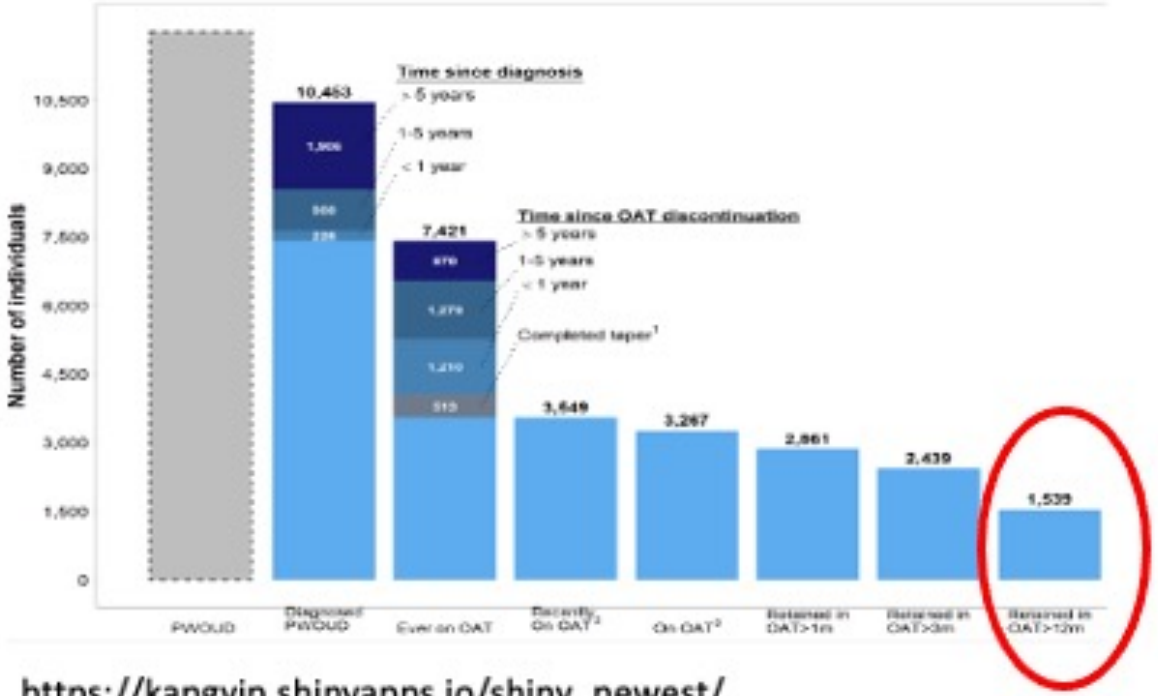
Development and validation of health system performance measures for opioid use disorder in British Columbia, Canada



Nosyk et al. https://doi.org/10.1016/j.drugalcdep.2022.109375
https://kangyip.shinyapps.io/shiny_newest/

In BC:
24.5% (8960/36,555) of those in need are retained at 12 months

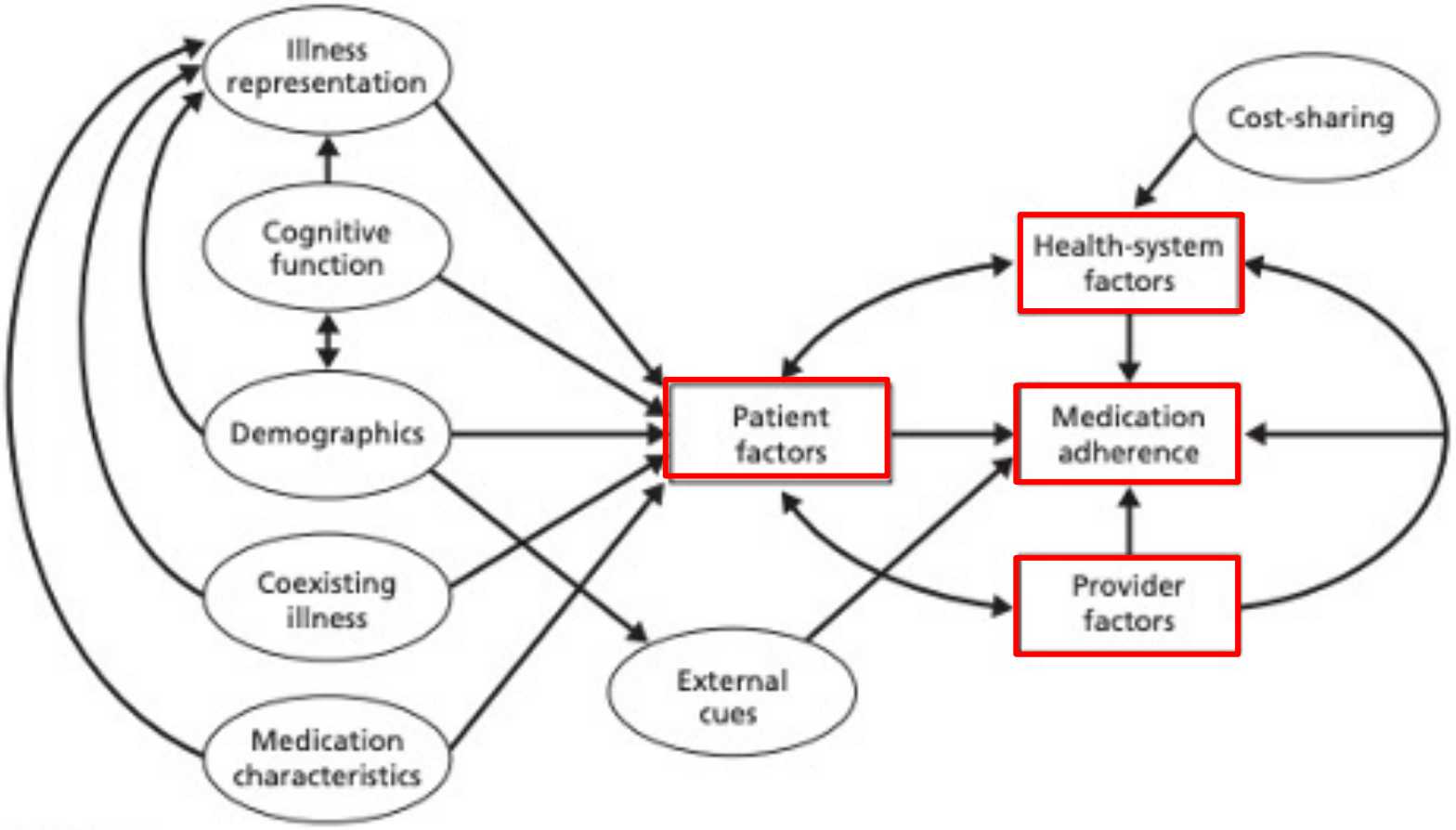
OUD Cascade of Care: Interior Health



https://kangyip.shinyapps.io/shiny_newest/

In IH:
22% (1539/6908) of those in need are retained at 12 months

Barriers to Medication Adherence



RAND TR765-2.1

https://www.rand.org/pubs/technical_reports/TR765.html

Barriers to Medication Adherence

Discontinuation of Opioid Agonist Treatment

- Of survey participants, 96 reported discontinuing OAT in the past 6 months. Thematic analysis of free text responses identified the following reasons for discontinuation of OAT:

Reasons for discontinuing OAT (n=79)

Challenges meeting program requirements

- Missed doses, leading to dose reductions
- Missed appointments/pick up times
- Cut off by prescriber/failed urine test
- Time/energy consuming

"If I missed even 1 day, I got cut off which left me sick

Missed pharmacy hours which did not suit my lifestyle which led to a drastically reduced dosage that was not effective at all and ended up using a lot anyway

Got kicked off methadose because of dirty urine on it for over a year, they said I show no clean time, not making an effort"

Treatment concerns

- Pain not controlled/dose too low/ineffective
- Felt sicker
- Stopped after medication was changed

"Does not agree with system. makes me sicker

It wasn't enough

Because it didn't help my pain I was only getting methadose and it doesn't work on my pain. I need my pills back so I don't die- please"

Access

- Non-continuity of care (out of prison/jail)
- Simpler to use street drugs
- Transportation difficulties
- Cost
- Unable to find provider

"Not by choice, released from prison unable to access physician to prescribe

Started using again (easier to use than go to a clinic)

I could not get to the doctor due to transportation and new community"

The Science Exists…

Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies

Luis Sordo,[1,2,3] Gregorio Barrio,[4] Maria J Bravo,[1,2] B Iciar Indave,[1,2] Louisa Degenhardt,[5,6] Lucas Wiessing,[7] Marica Ferri,[7] Roberto Pastor-Barriuso[1,2]

ABSTRACT

OBJECTIVE

To compare the risk for all cause and overdose mortality in people with opioid dependence during and after substitution treatment with methadone or buprenorphine and to characterise trends in risk of mortality after initiation and cessation of treatment.

DESIGN

Systematic review and meta-analysis.

DATA SOURCES

Medline, Embase, PsycINFO, and LILACS to September 2016.

STUDY SELECTION

Prospective or retrospective cohort studies in people with opioid dependence that reported deaths from all causes or overdose during follow-up periods in and out of opioid substitution treatment with methadone or buprenorphine.

DATA EXTRACTION AND SYNTHESIS

Two independent reviewers performed data extraction and assessed study quality. Mortality rates in and out of treatment were jointly combined across methadone or buprenorphine cohorts by using multivariate random effects meta-analysis.

RESULTS

There were 19 eligible cohorts, following 122 885 people treated with methadone over 1.3-13.9 years and 15 831 people treated with buprenorphine over 1.1-4.5 years. Pooled all cause mortality rates were 11.3 and 36.1 per 1000 person years in and out of methadone treatment (unadjusted out-to-in rate ratio 3.20, 95% confidence interval 2.65 to 3.86) and reduced to 4.3 and 9.5 in and out of buprenorphine treatment (2.20, 1.34 to 3.61). In pooled trend analysis, all cause mortality dropped sharply over the first four weeks of methadone treatment and decreased gradually two weeks after leaving treatment. All cause mortality remained stable during induction and remaining time on buprenorphine treatment. Overdose mortality evolved similarly, with pooled overdose mortality rates of 2.6 and 12.7 per 1000 person years in and out of methadone treatment (unadjusted out-to-in rate ratio 4.80, 2.90 to 7.96) and 1.4 and 4.6 in and out of buprenorphine treatment.

CONCLUSIONS

Retention in methadone and buprenorphine treatment is associated with substantial reductions in the risk for all cause and overdose mortality in people dependent on opioids. The induction phase onto methadone treatment and the time immediately after leaving treatment with both drugs are periods of particularly increased mortality risk, which should be dealt with by both public health and clinical strategies to mitigate such risk. These findings are potentially important, but further research must be conducted to properly account for potential confounding and selection bias in comparisons of mortality risk between opioid substitution treatments, as well as throughout periods in and out of each treatment.

Introduction

Opioid dependence is a rising drug use disorder with substantial contribution to the global disease burden. The absolute number (age standardised prevalence) of people with opioid dependence worldwide increased from 10.4 million (0.20%) in 1990 to 15.5 million (0.22%)

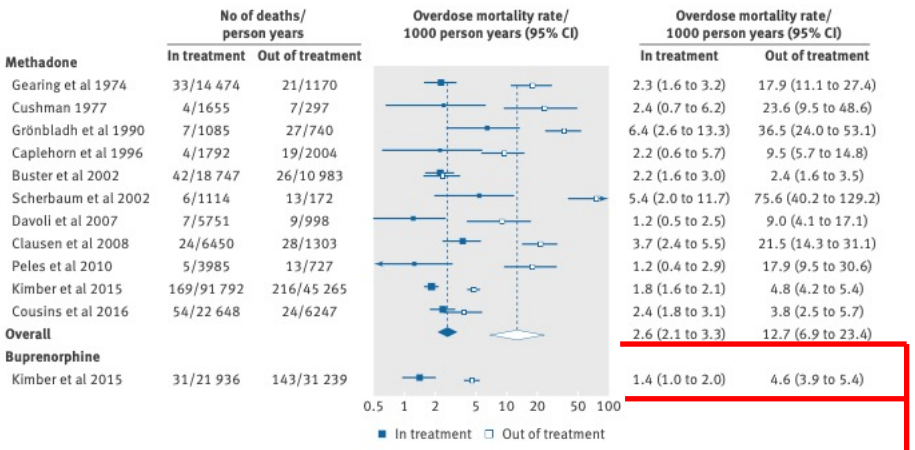


Fig 3 | Overdose mortality rates in and out of opioid substitution treatment with methadone or buprenorphine and overall pooled overdose mortality rates, 1974-2016. Area of each square is proportional to study weight in meta-analysis. Horizontal lines represent exact 95% confidence intervals based on Poisson distribution. Diamonds represent pooled overdose mortality rates during periods in and out of treatment across all methadone cohorts estimated from bivariate random effects meta-analysis on log transformed rates in both treatment periods

Pooled All Cause Mortality:

On methadone: 11.36 per 1000 person years

Off methadone: 36.1 per 1000 person years

On buprenorphine: 4.3 per 1000 person years

Off buprenorphine: 9.5 per 1000 person years

Overdose Mortality:

On methadone: 2.6 per 1000 person years

Off methadone: 12.7 per 1000 person years

On buprenorphine: 1.4 per 1000 person years

Off buprenorphine: 4.6 per 1000 person years

BMJ 2017;357:j1550 http://dx.doi.org/10.1136/bmj.j1550

BMJ 2020;368:m772 doi: 10.1136/bmj.m772 (Published 31 March 2020)

RESEARCH

Opioid agonist treatment and risk of mortality during opioid overdose public health emergency: population based retrospective cohort study

OPEN ACCESS

Lindsay A Pearce *project coordinator*[1], Jeong Eun Min *senior statistician*[1], Micah Piske *project coordinator*[1], Haoxuan Zhou *statistician*[1], Fahmida Homayra *statistician*[1], Amanda Slaunwhite *senior scientist*[2], Mike Irvine *postdoctoral researcher*[2], Gina McGowan *director of research translation*[3], Bohdan Nosyk *research scientist and associate professor*[1 4]

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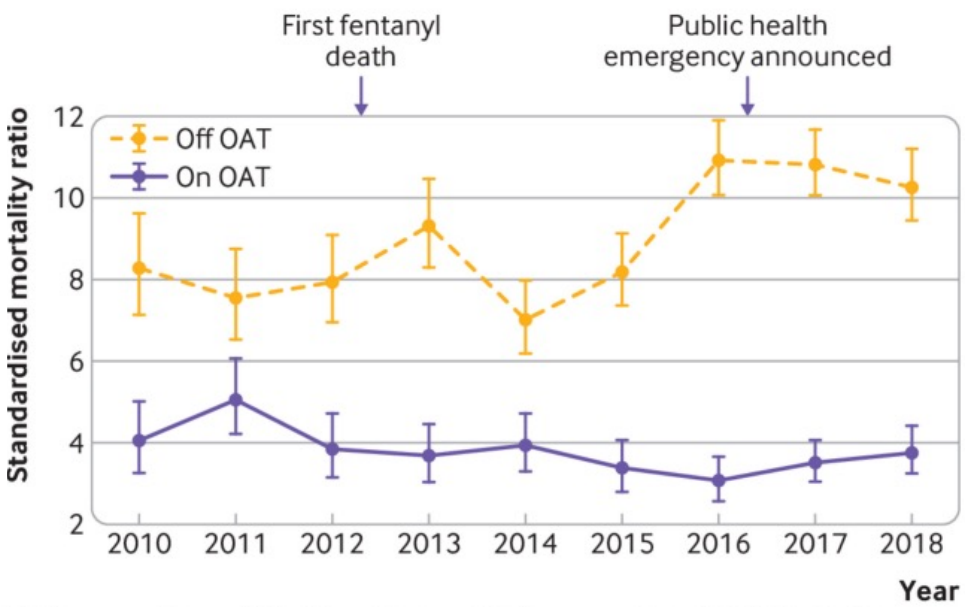


Fig 2 All cause mortality on and off opioid agonist treatment (OAT) in presence of fentanyl. British Columbia, 1 January 1996 to 30 September 2018

Table 3| Relative risks of mortality off opioid agonist treatment (OAT) versus on OAT (reference), according to key periods of opioid overdose public health emergency in British Columbia, Canada, 1 January 1996 to 30 September 2018

Period	Risk ratio (95% CI)	
	Unadjusted	Adjusted*
Overall†	2.2 (2.1 to 2.4)	2.5 (2.1 to 2.9)
Period 1: before first death involving fentanyl ‡	1.8 (1.7 to 2.0)	2.1 (1.8 to 2.4)
Period 2: after first death involving fentanyl§	2.4 (2.2 to 2.7)	2.6 (2.1 to 3.2)
Period 3: after public health emergency declaration¶	3.1 (2.8 to 3.4)	3.4 (2.8 to 4.3)

Risk ratios compare crude mortality rate off OAT versus on OAT.

* Adjusted for age, sex, medication type (buprenorphine/naloxone only, methadone only), OAT period (≤4 weeks or >4 weeks since starting or stopping OAT).

† Entire follow-up period (1 January 1996 to 30 September 2018).

‡ Beginning of follow-up (1 January 1996) to day before first fentanyl related death in British Columbia (31 March 2012).

§ Date of first fentanyl related death in British Columbia (1 April 2012) to day before public health emergency declaration (13 April 2016)

¶ Date of emergency declaration (14 April 2016) to end of follow-up (30 September 2018).

OAT reduces risk of mortality even in the presence of fentanyl

Pearce et al PBMJ 2020;368:m772 doi: 10.1136/bmj.m772 (Published 31 March 2020)

Clinical Management Guidelines

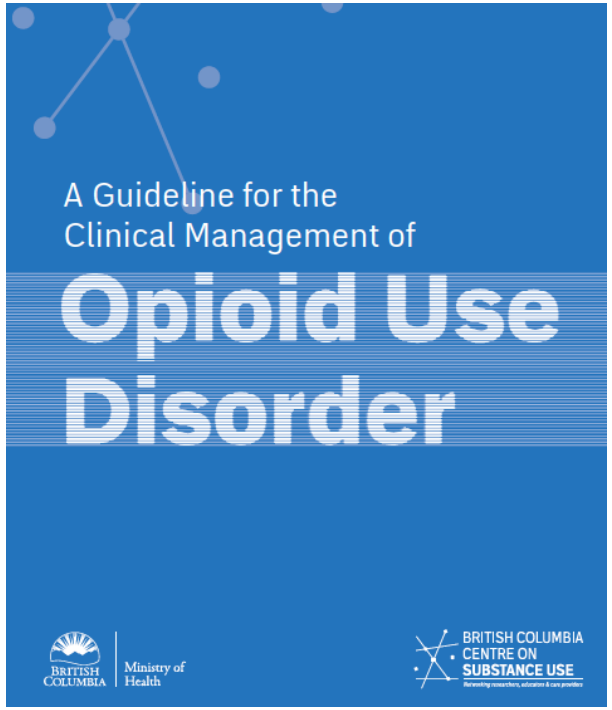


Table 1. Clinical management of opioid use disorder

WITHDRAWAL MANAGEMENT [1–3]
Tapered methadone, buprenorphine, or alpha$_2$-adrenergic agonists
+/– psychosocial treatment [4]
+/– residential treatment
+/– oral naltrexone [5]

AGONIST THERAPIES
Buprenorphine/naloxone [6] *(preferred)*
Methadone [7,8]
+/– psychosocial treatment
+/– residential treatment

SPECIALIST-LED ALTERNATIVE APPROACHES
Slow-release oral morphine [9,10]
+/– psychosocial treatment
+/– residential treatment

← TREATMENT INTENSITY →

LOW
If opioid use continues, consider treatment intensification. »

HIGH
Where possible, « simplify treatment.

+

HARM REDUCTION [11-13]
Across the treatment intensity spectrum, evidence-based harm reduction should be offered to all, including:
- Education re: safer user of sterile syringes/needles and other applicable substance use equipment
- Access to sterile syringes, needles, and other supplies
- Access to Supervised Injection Sites (SIS)
- Take-Home-Naloxone (THN) kits

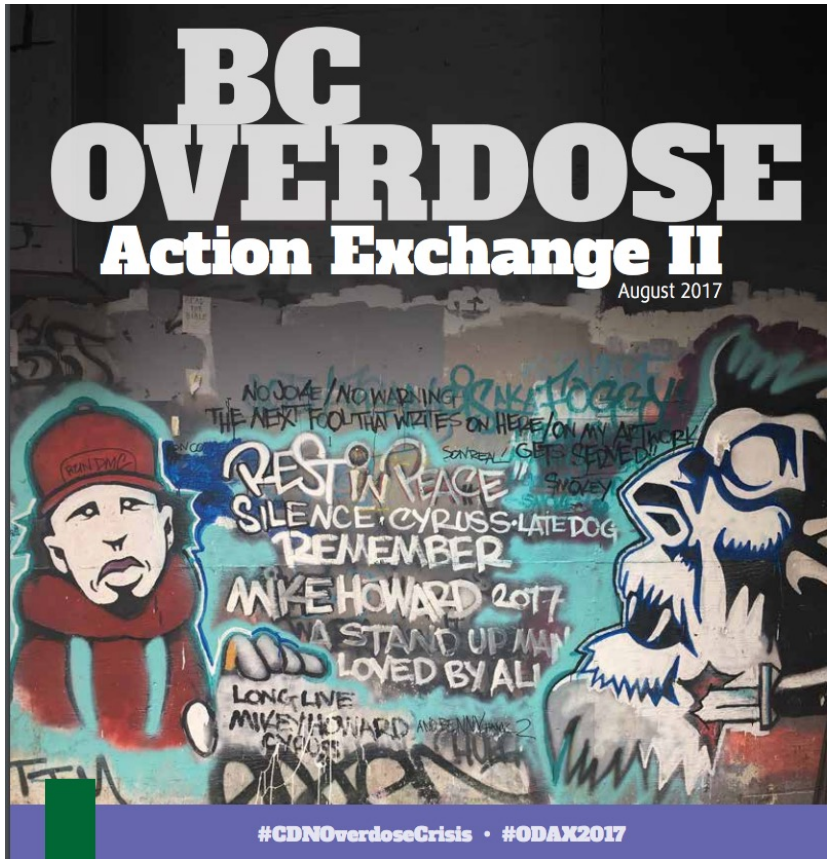
http://www.bccsu.ca/wp-content/uploads/2017/06/BC-OUD-Guidelines_June2017.pdf

“Knowing is not enough; we must apply.
Willing is not enough; we must do.”

-Goethe

What can we do about the OD crisis?

- Engage peers in program development and leadership
- Address contamination of the drug supply
- Support appropriate pain management therapies
- Build on the success of Overdose Prevention Sites
- Expand and improve addiction treatment
- Align law enforcement efforts with public health
- Reform drug laws
- Address structural barriers and upstream factors
- Counter stigma against people who use drugs
- Implement targeted research, surveillance and evaluation initiatives



http://www.bccdc.ca/resource-gallery/Documents/bccdc-overdose-action-screen.pdf

QI Journey: How did we get here?

Seek and Treat for Optimal Prevention of HIV/AIDS
STOP HIV/AIDS

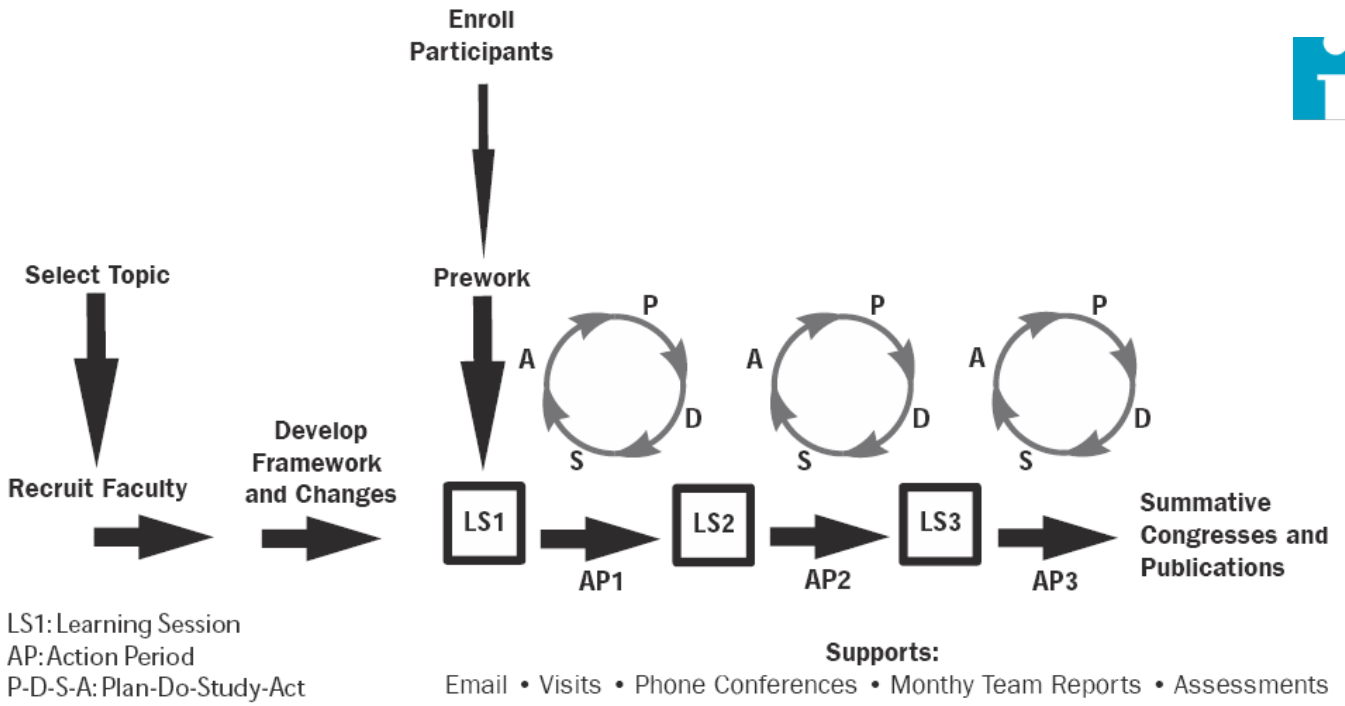
Best-Practices in ORAL OPIOID AGONIST THERAPY Collaborative

INTERNATIONAL HIV TREATMENT AS PREVENTION WORKSHOP

BC-CfE BOOST
Best-Practices in Oral Opioid agoniSt Therapy Provincial Collaborative

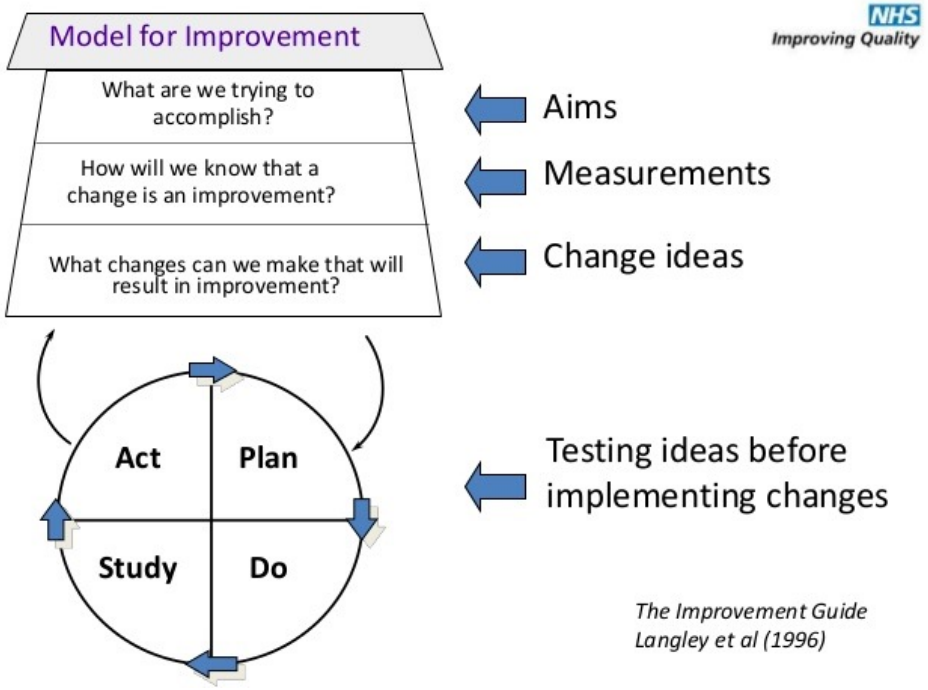
Treatment Optimization of Psychosis Collaborative

Structured Learning Collaborative

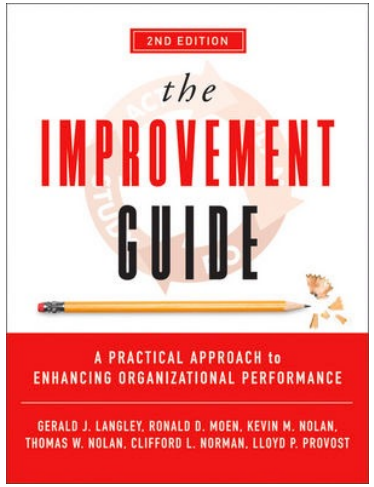


Institute *for* Healthcare Improvement

Quality Improvement Approach



NHS
Improving Quality



The Improvement Guide
Langley et al (1996)

The BOOST Collaborative

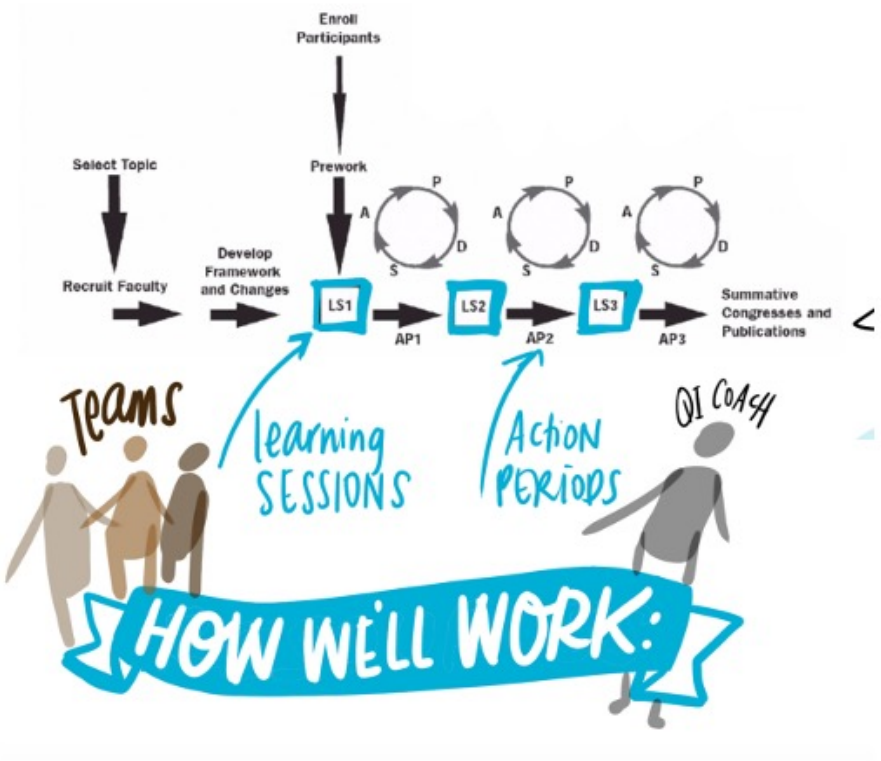
- **Goal: data-driven improvement at the frontlines**

- Other benefits
  1. Collaboration and pooled resources and expertise
  2. Chance for advocating for broader system changes

The BOOST Collaborative

- QI training, OAT education, client & family voice
- Testing changes during action periods
- Monthly reporting
- QI coaching

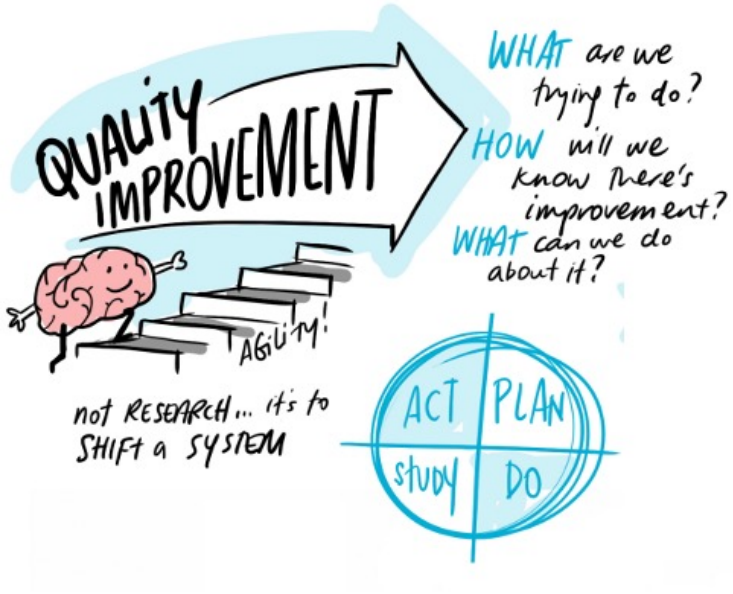
A Plan and Collective Effort



Graphics from Sam Bradd, Graphic Recorder

- 7 BOOST learning events delivered to date
- 8 teams enrolled, approx. 50 participants
- **100% strongly agreed/agreed that session content provided additional skills or knowledge gained to: apply QI methods**
- **73% strongly agreed/agreed that session content provided additional skills or knowledge gained to: include the client and/or family voice**
- **100% strongly agreed/agreed that level of confidence in providing OAT care to clients with OUD increased as a result of session content**

Changes Tested



Graphics from Sam Bradd, Graphic Recorder

- Referral forms targeted towards gathering better client contact & location info for intake appointments
- Offering Telehealth on specific days/times in an effort to reduce missed appointments
- Other processes to follow up with clients who have missed provider appointments
- Trial of daily medication deliveries to targeted clients
- Providing standardized education to all OAT staff on certain topics, e.g. use of Sublocade
- Automated text appointment reminders
- Liaising with pharmacy to advise client of upcoming appointment date/time
- Connecting with clients in multiple ways (text, phone, pharmacy reminder)

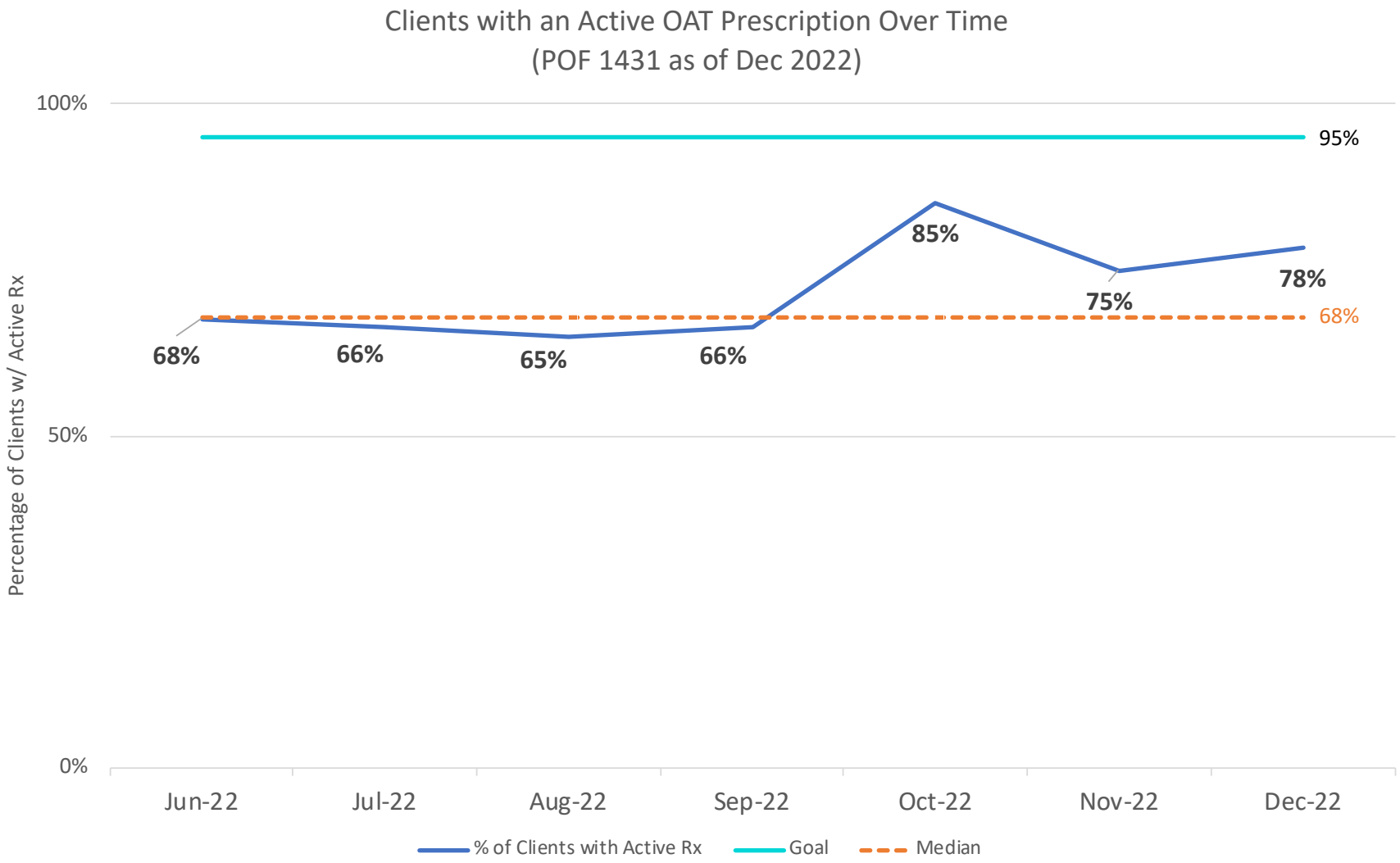
BOOST Core Measures

#	Core Measure	Definition/Numerator	Denominator	Target
1	**Population of Focus (POF)**	Clients diagnosed with an opioid use disorder and receiving OUD care from the participating team.	N/A	N/A
2	**Active OAT prescription**	Clients with a current OAT prescription that has an end date of the same day or a later date regardless of dose.	POF	95%
3	**Retention on OAT for >3months**	Clients with an OAT prescription for an un-interrupted period of 3 months or greater.	POF with an RX start date of 3 months or greater	95%
4	**Patient Voice Process**	Participating teams with a regular and ongoing process in place to capture the patient voice.	Total number of participating teams	100%

Data limitations

- Team-submitted data
  - Human error
  - EMR inaccuracies
- Variation in # of teams reporting
  - Doesn’t necessarily reflect all teams every month

Results to date: BOOST Core Measures



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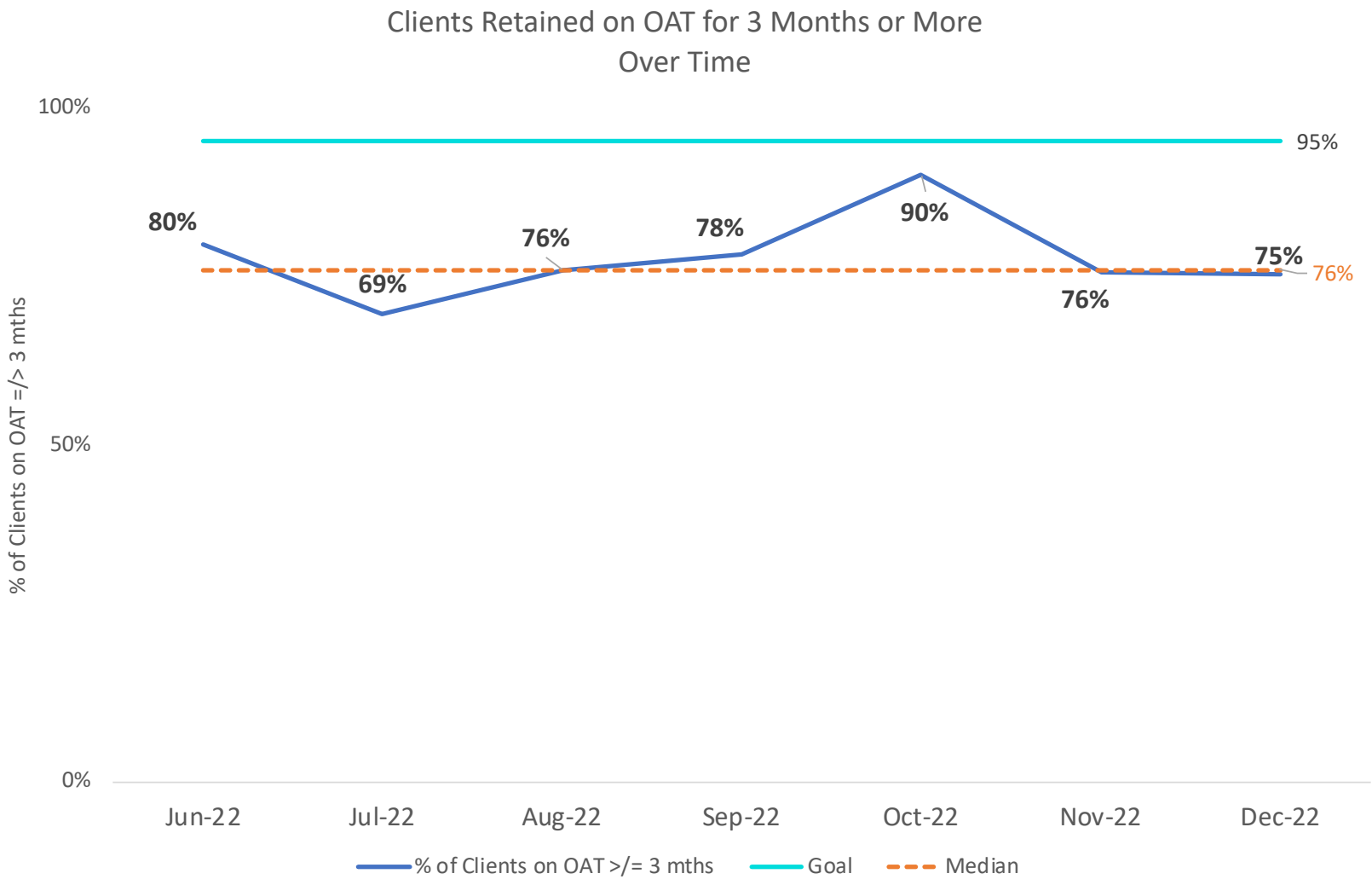
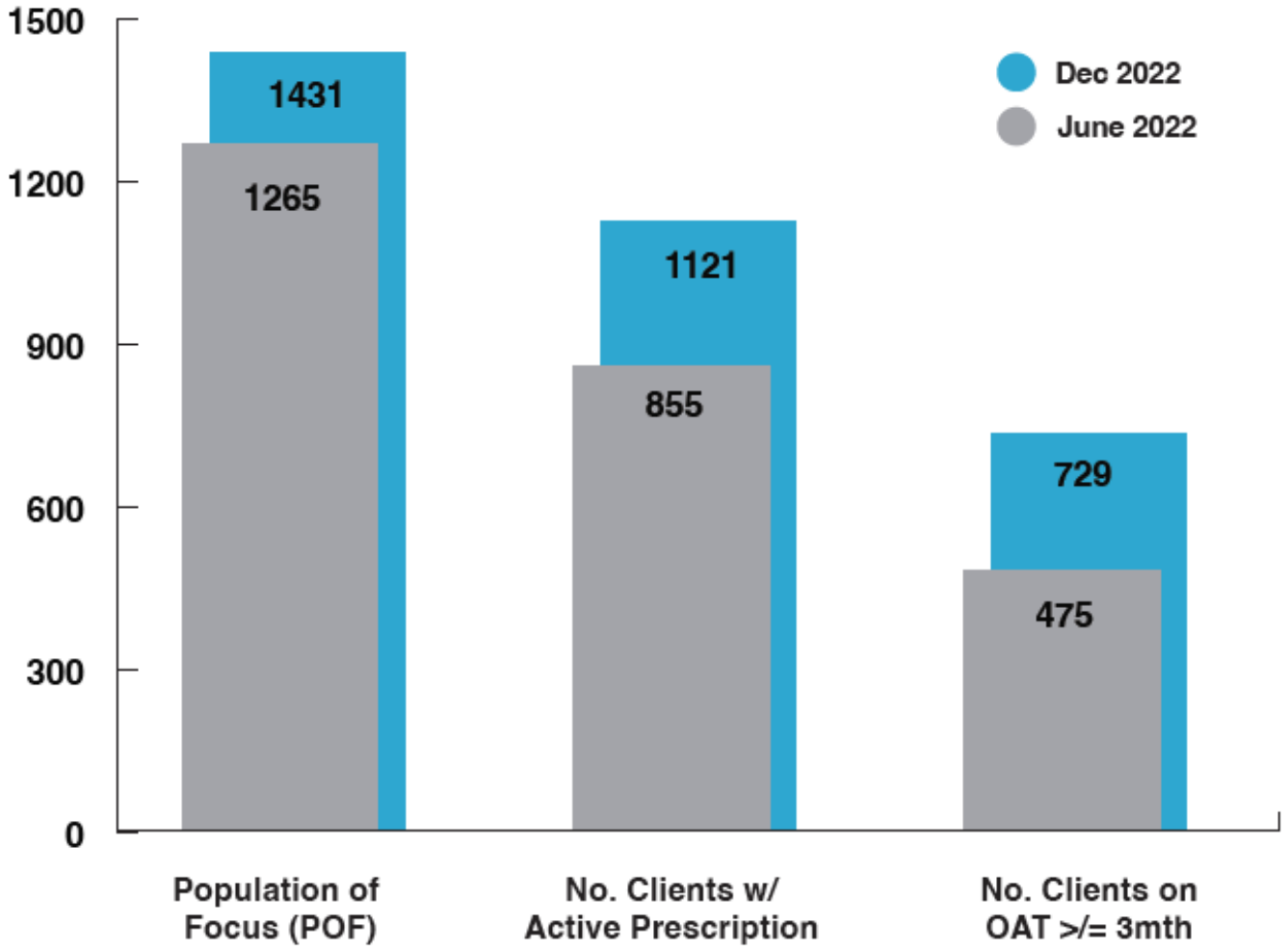
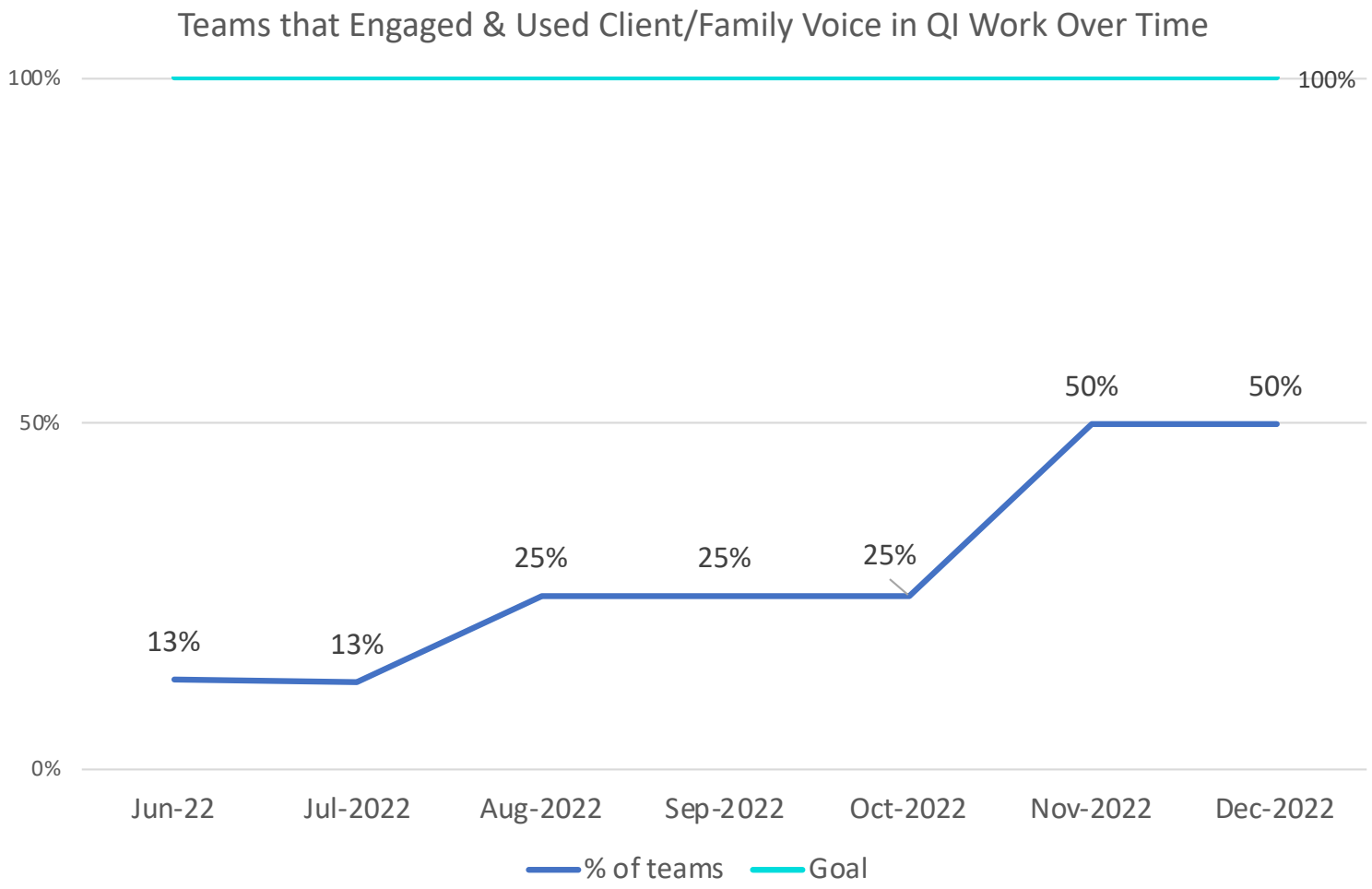


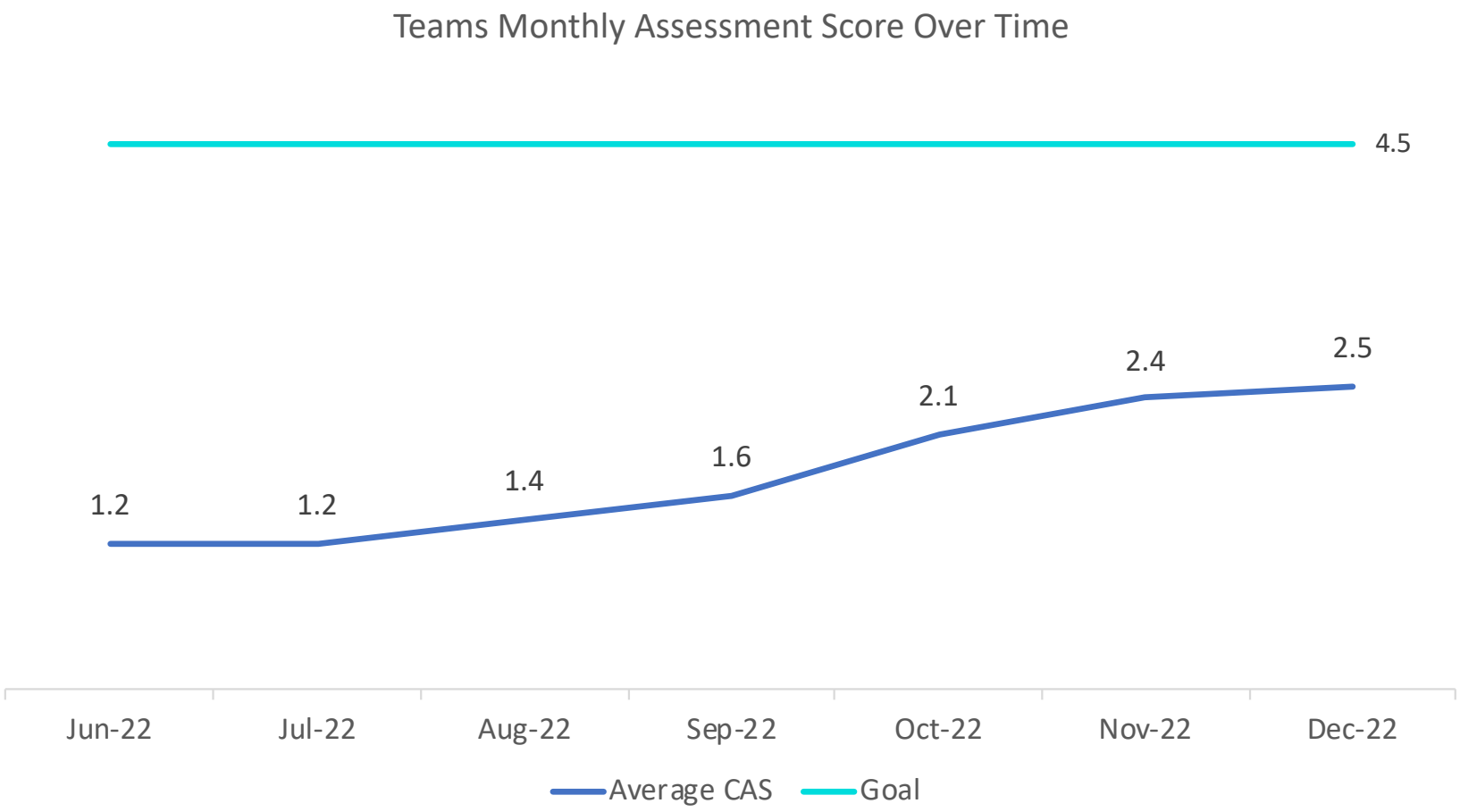
Results to date: BOOST Core Measures



Results to date: BOOST Core Measures

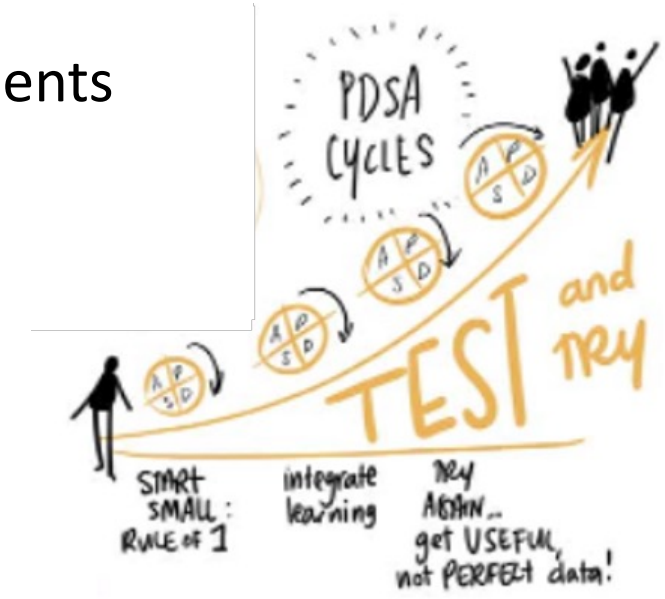


Score	Description
1.0 Forming a team	Team has been formed; target population identified; aim determined and baseline measurement begun.
1.5 Planning for the project has begun	Team is meeting, discussion is occurring. Plans for the project have been made.
2.0 Activity but not changes	Team actively engaged in development, research, discussion but no changes have been tested.
2.5 Changes tested but no improvements	Components of the model being tested but no improvement in measures. Data on key measures are reported.
3.0 Modest improvement	Initial test cycles have been completed and implementation begun for several components. Evidence of moderate improvement in process measures.
3.5 Improvement	Some improvement in outcome measures, process measures continuing to improve, PDSA test cycles on all components of the Change Package, changes implemented for many components of the Change Package.
4.0 Significant improvement	Most components of the Change Package are implemented for the population of focus. Evidence of sustained improvement in outcome measures, halfway toward accomplishing all of the goals. Plans for spread the improvement are in place.
4.5 Sustainable improvement	Sustained improvement in most outcomes' measures, 75% of goals achieved, spread to a larger population has begun.
5.0 Outstanding sustainable results	All components of the Change Package implemented, all goals of the aim have been accomplished, outcome measures at national benchmark levels, and spread to another facility is underway.



Accomplishments to Date

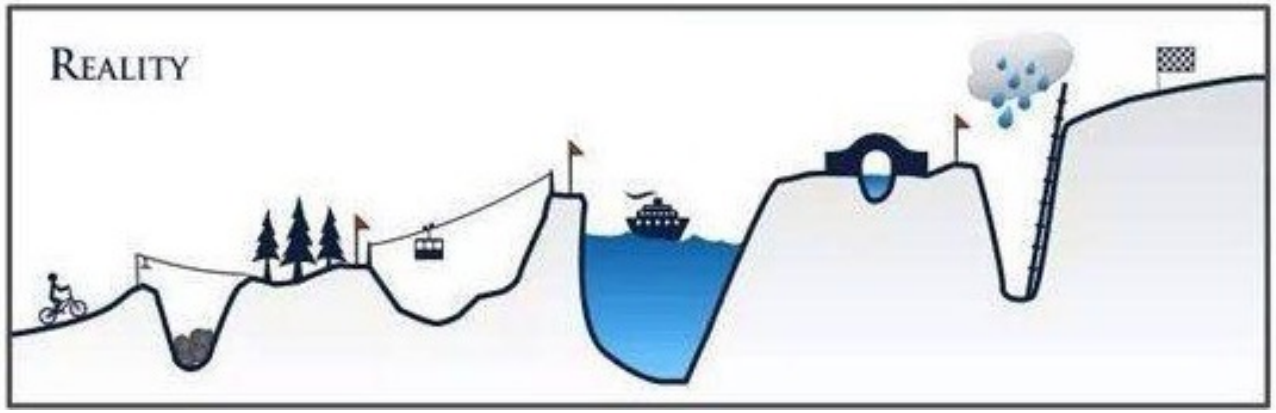
- Increased knowledge & confidence in OUD care
- Increased quality improvement capacity
- Enhanced opportunities for collaboration and networking between teams
- Increases in the # of clients with an active Rx and the # of clients retained on OAT for 3 months or more!
- Increased connections to community resources
- Enhanced capability for virtual meetings & use of tools (e.g. Miro)
- Mindset shift …"I CAN do QI!"



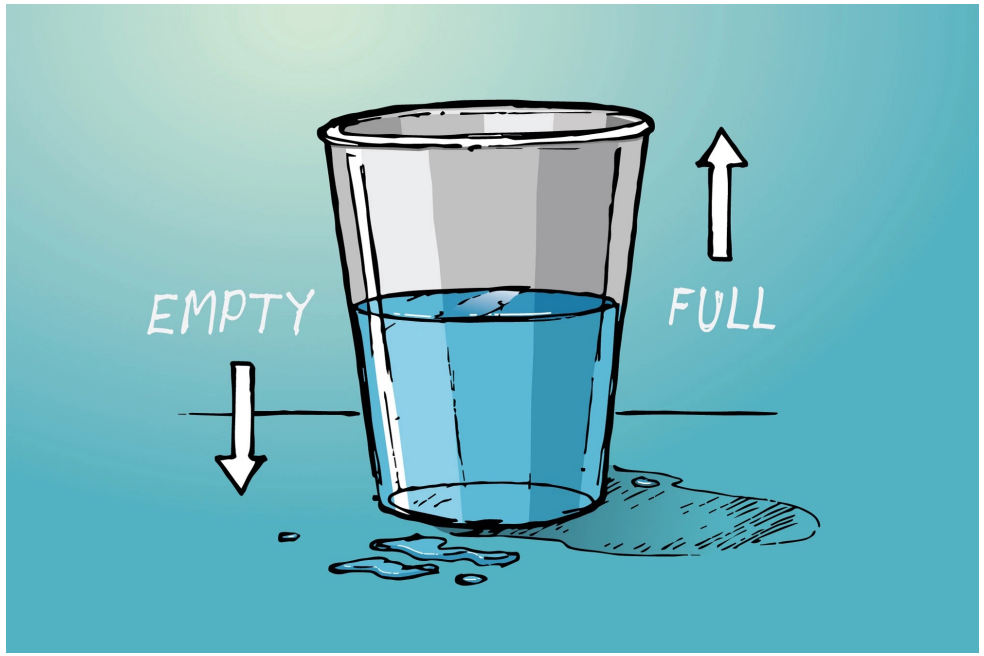
Future Opportunities

- Focusing on integration of QI into daily workflow/routine
- Increased engagement of physicians in BOOST QI work
- EMR improvements


YOUR PLAN


REALITY

Summary



We’ve made great progress, but still more to do!

The biggest room in the world,
is the room for improvement.
Author Unknown