

Investigation of sociodemographic and event factors preceding severe residential overdose events among males in Fraser Health, British Columbia, 2015-17

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On behalf of project team at Fraser Health
CPHA, May 30, 2018

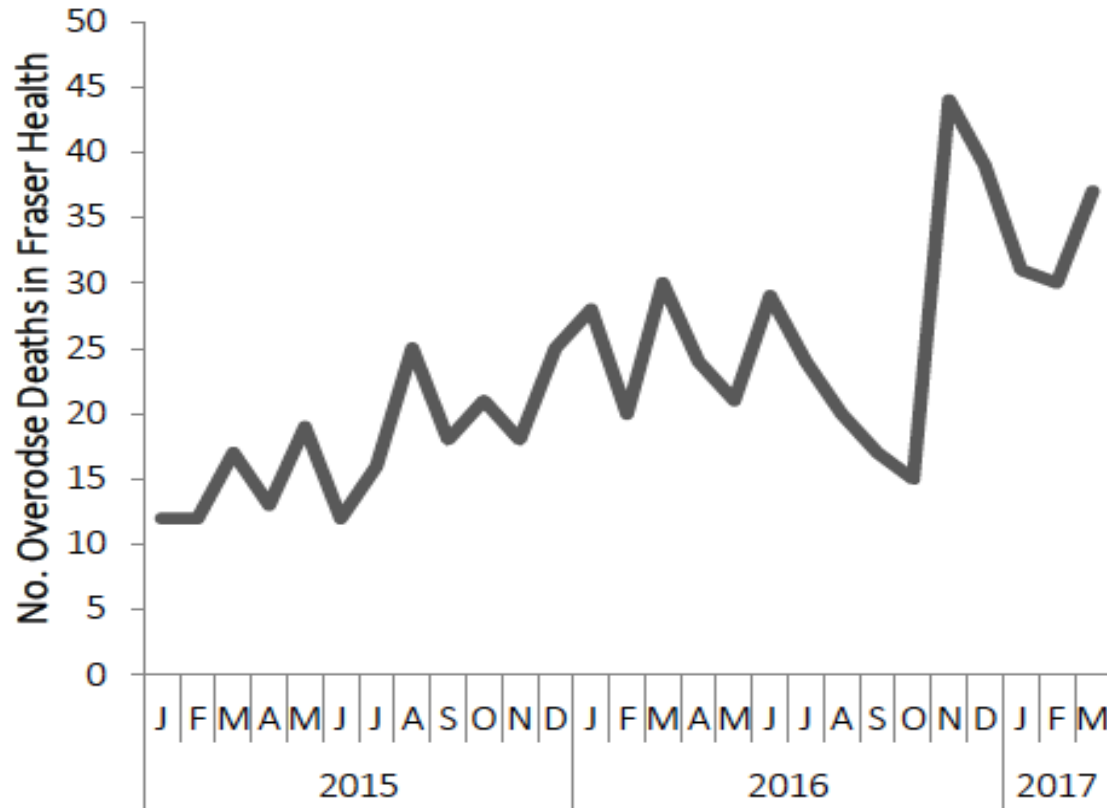
Conflict of Interest

- None to disclose

Context – Fraser Health, BC, circa March 2017

Overdose Deaths

Figure 2. Monthly illicit drug overdose deaths within Fraser Health.



Data Source: BC Coroner Service. Preliminary data, numbers subject to change.

Epidemiology of fatalities

Who is dying from overdose?



The opioid crisis is heavily impacting men across Fraser Health.



85% of fatal overdoses are among men.²



19 – 59 year olds are the most impacted³ with **30 – 39 year olds** having the highest number of overdose deaths.



70% of overdose deaths are in private residences.

- How do we reach them?

Residential OD Events

- Fatal OD events in private residences
 - Limited accessible data sources
- Serious (hospitalized) non-fatal OD events
 - Accessible data sources
 - At risk of dying, proxy for fatal events
 - Factors for survival
 - Context of men using in private residences

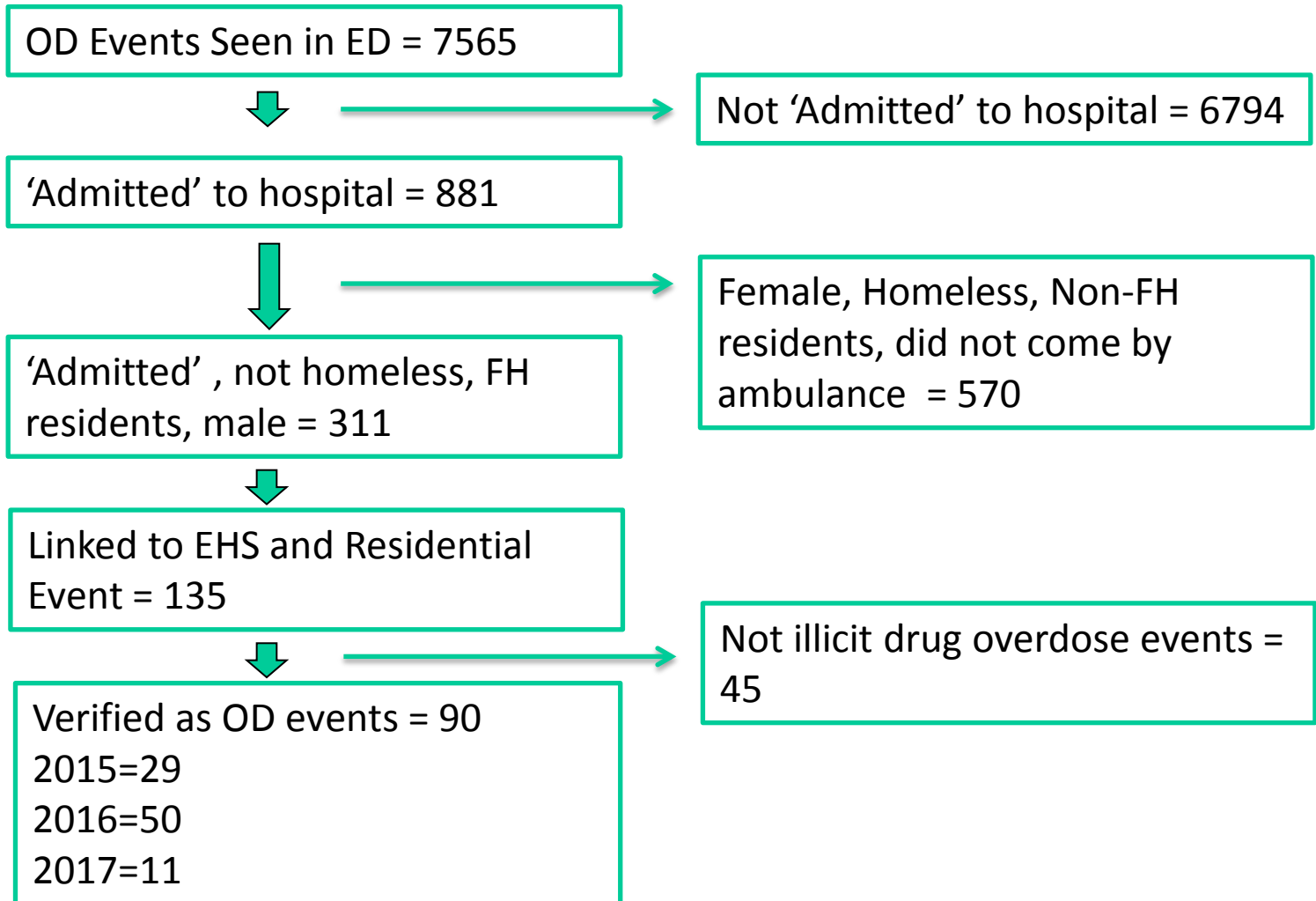
Objective

- Gather information to guide local public health interventions for this population
 - Sociodemographics
 - Healthcare and substance use history
 - Overdose event circumstances

Methods

- Retrospective hospital chart review
 - Men admitted to hospital in FH with an illicit drug overdose
 - Brought to hospital from a private residence location
 - Have a home address in FH region

Methods: Case Selection



EHS data 8-10 weeks delayed. This linkage completed in May 2017. Current numbers will be higher to those who meet all criteria.

Methods: Internally-developed Review Tool

Data extraction tool covered

- **Sociodemographic** (e.g. relationship status, housing, income, occupation, hobbies, social support rating)
- **Drug use, treatment and mental health history** (e.g. level of substance use rating, prescription opioid use, past treatment history, mental health diagnoses)
- **Circumstances of overdose event** (e.g. alone, who found, naloxone given, substances, recently like stressors)
- **Outcome after admissions** (e.g. death, admission, referrals, readmission for OD or MH)
- Brief history of event and person (free text)

Timeframe for information (current visit, past visits) captured

Results



Sociodemographics – age and living situation

Median **age** 34years old
(range: 13-80 years)

12% lived **alone**
64% lived with
family



37% had **significant partner** (least in 19-29years)

61% regular **social support** contact

Sociodemographics – work history & housing

28% steady **employment**

48% in **Trades**

(current or previous
work sector of 80% with
known employment)



19% on **Disability**
Insurance

20% **precarious** housing situation

Past History – Documented Health Conditions

Mental Health and/or Substance Use Conditions



32% had ONE condition

28% had FOUR or MORE

28% on
prescription opioid

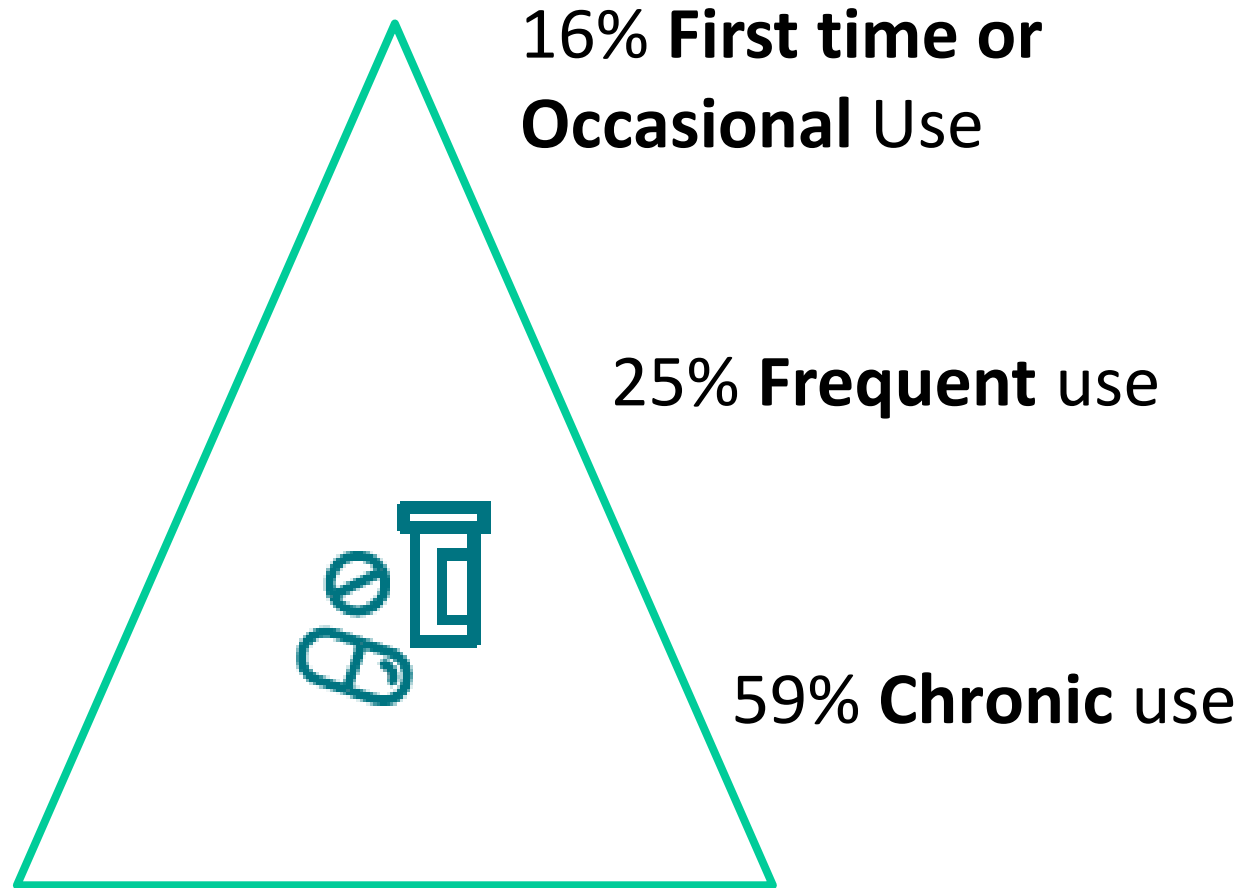


52% past **substance
use treatment**

40% current/past
pain management issue

77% had **GP**

Assigned Frequency of Substance Use



Event Information

63% used **Alone**

4% had pre-EMS
Naloxone



54% found by
**partner or other
household member**

39% had **non-fentanyl/non-heroin opioid** reported
(34% had heroin listed)

Post-Event Follow-up

1 **death** during admission;
3 **subsequent deaths**

36% had subsequent
overdose ER visit



34% had subsequent
other ER visit

30% referred to
GP for follow-up

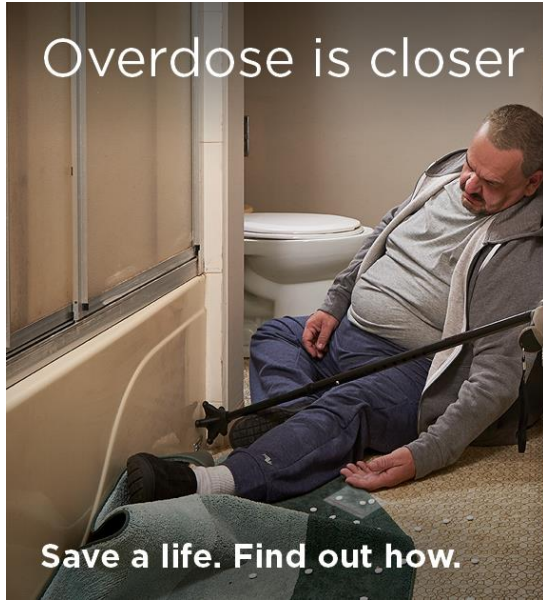
Knowledge Translation: Reorient health services

- Public Health, EDs, GPs, Mental Health and Substance Use, Pain Services, Pharmacy
 - Touch points where accessing services
- Screening, Brief Intervention, Referral to Treatment
- Post-ED discharge follow-up trial

Knowledge Translation: Communication and Engagement

- Targeting household members/social supports: increase awareness, availability of naloxone, checking in on loved ones
- Trades Industry awareness and prevention
- Office of the Chief Medical Health Officer
Annual Report, January 2018

Overdose is closer than you think.



Save a life. Find out how.



 fraserhealth

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Conclusions

- Time-intensive, but rapid mechanism to gather information not available elsewhere
 - Limitations on data capture (identification of events and chart data)
 - No comparison group
- Local data appreciated for targeting interventions
- Address misconceptions about who is at risk

Acknowledgements

Co-investigators

- **Salman Klar**
- **Alison Orth**
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Data Extraction

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- Vesna Ivkov

Analyses

- Dani Chu, Forrest Paton, Lukas Wu
- Helen Li
- Health Business Analytics

Interpretation and Background

- Greg Whalen
- Marika Sandrelli

Questions?

References:

<https://www.fraserhealth.ca/about-us/health-reports/>



DATA APPENDIX AND EXTRA SLIDES

Methods: Available Data

Case selection

- Combined Emergency Health Services electronic data (location of pick-up)
- ED electronic data (routine surveillance)

Information on cases

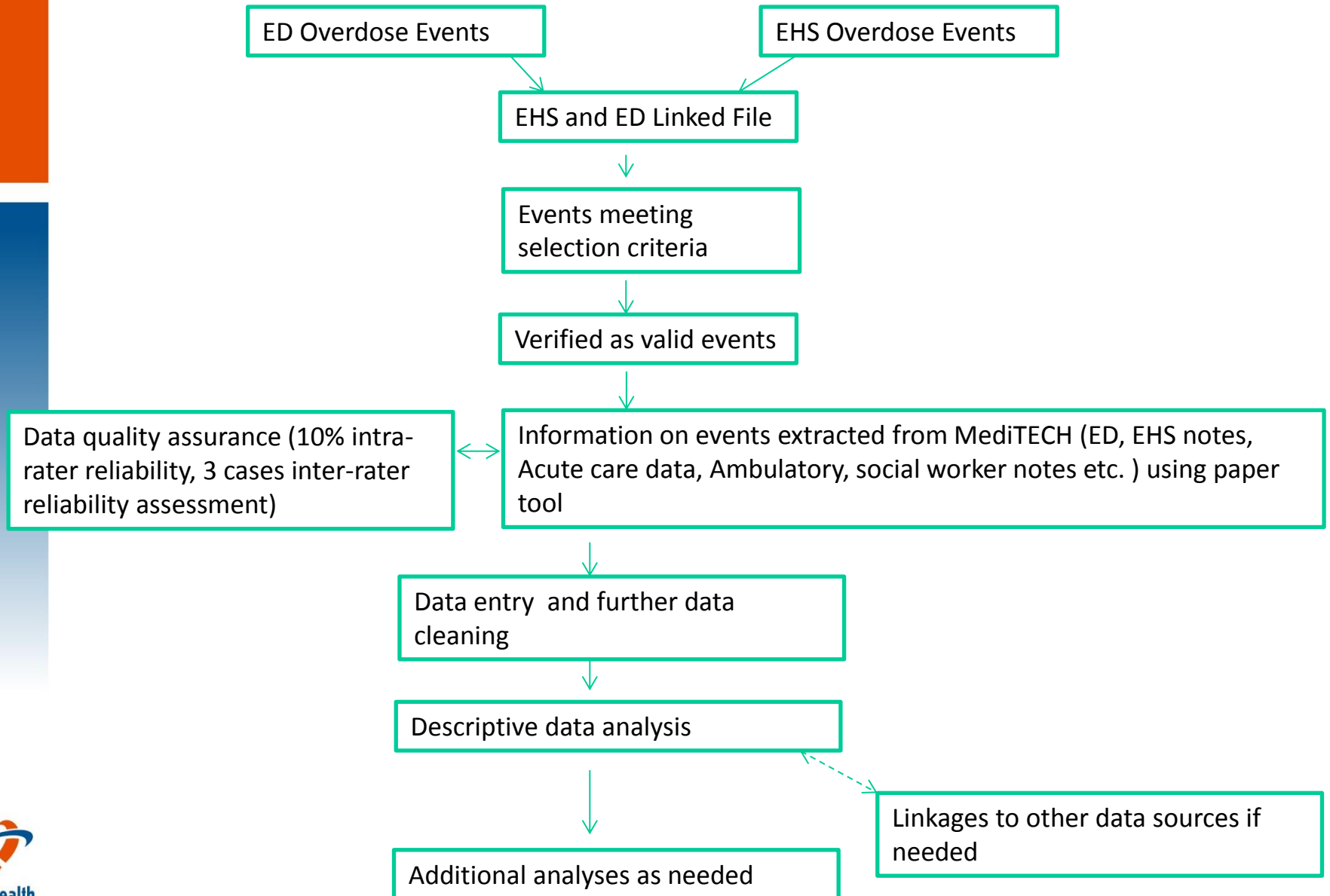
- MediTECH - ED notes, acute admissions notes, notes on paramedics reports, social workers notes, laboratory etc.
- Past MHSU and ED/Acute care access data via extracted by Health Business Analytics

Methods: Case Selection

Inclusion Criteria:

- Male; AND
- Aged 13 years and older; AND
- Overdose event from illicit drug and/or prescription opioid; AND
- Not homeless at time of the event; AND
- Stated address in Fraser Health Region; AND
- Event at a residential location; AND
- 'Admitted' to a Fraser Health Hospital; AND
- Happened between June 14, 2015 - March 31, 2017

Methods: Chart Review Process



Methods: Data extraction and Analyses

- Out of 135 events identified, data was collected on 90 events identified as 'true' overdose
- Data entered into EpiInfo by two people who performed quality checks during entry
- Descriptive analyses and crosstabs
- Significance tested using Chisq tests
- Results presented by age and substance use level

Limitations

Chart Review Events vs. OD Deaths

- *Survived clients likely differ from those who died. Extrapolate with caution.*

Administrative Data Source

- Limited by information collected and recorded in the chart
- Amount of information on clients differs by length of stay, consultations during admission, documentation and patient provision of information
- Missing/unknown does not mean 'no' or 'none'
- Those with earlier events have longer follow-up period to determine subsequent events
- Older clients with more visits have more information available; Unknown and missing information higher among younger age groups

Selection/Observation Bias

- ED and EHS algorithm to pick OD events does not pick all events; limitations on matching from ED and EHS
- Social support and Substance Use rating scales subjective determination based on available information

Limitations

Chart Review Events vs. OD Deaths

Survived clients likely differ from those who died. Extrapolate with caution.

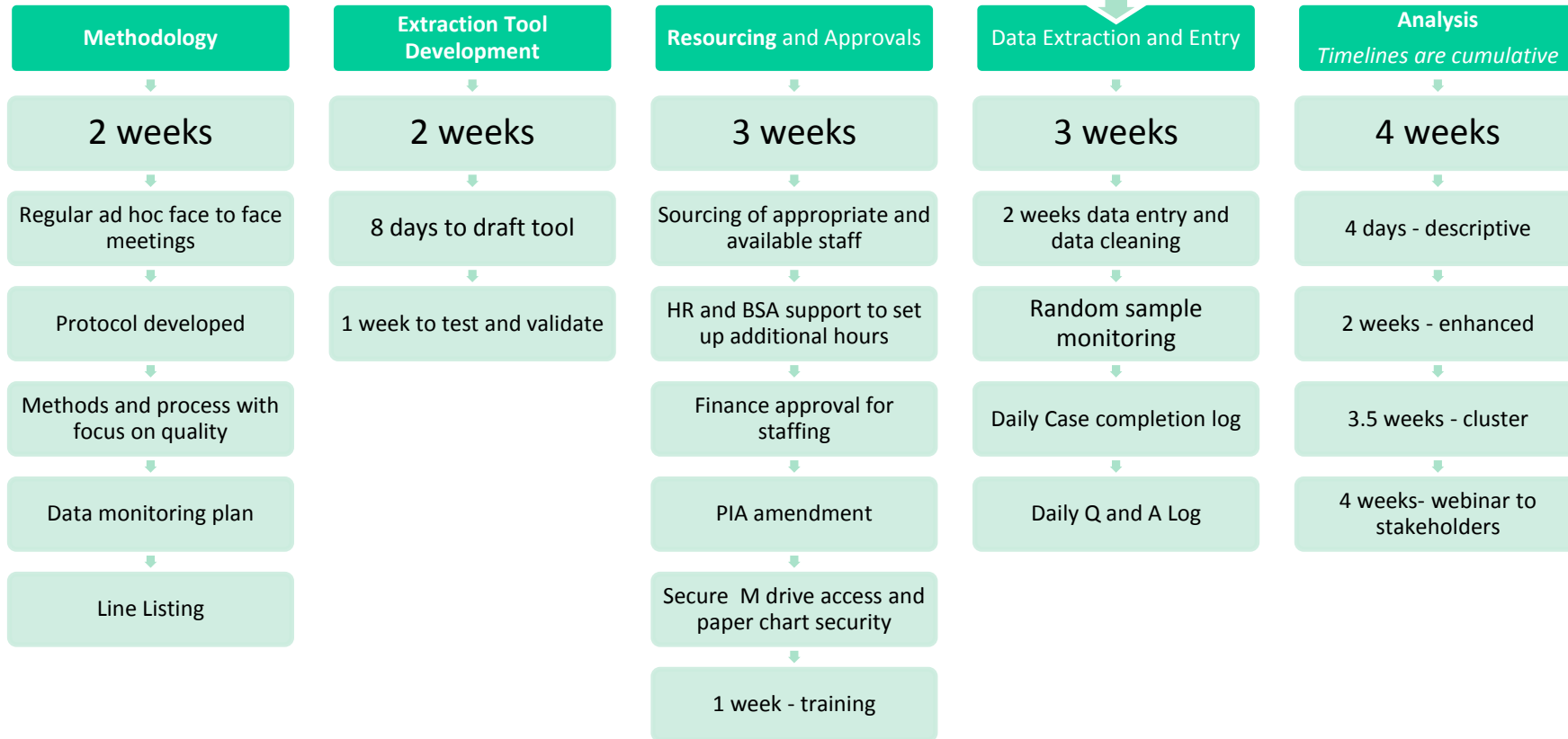
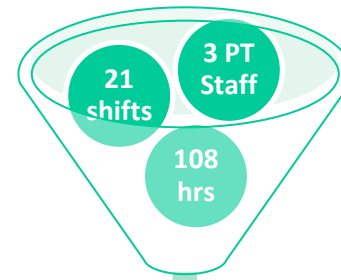
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Workflow and Timelines



May 10 - July 31 2017

11.5 weeks from conception to knowledge dissemination

Note: additional KT work continues, including publication.

Social Support Availability

	Overall N (%)
SS1 - Lives Alone, no supports ; SS2 – has someone who is looking in on them	14 (16)
SS3 – has family/support person but not regular contact	18 (20)
SS4 – has regular contact with family/support but unable to support fully	25 (28)
SS5 – has family /support person who is very supportive	30 (33)

Results: Substance use level

- Rating scale (SU1-4) developed for chart review to categorize pattern of use
- Over 85% had frequent or chronic substance use history vs. few occasional or first time users (16%)

Use Level	N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)
SU1 - First time: New to drugs or very little experience with illicit drugs.	6 (7)	2 (6)	1 (3)	2 (9)
SU2 - Occasional use: Uses drugs once in a while	8 (9)	2 (6)	4 (14)	1 (4)
SU3 –Frequent use: Frequently uses drugs, may include prescription or illicit opioids	23 (25)	9 (26)	5 (17)	7 (30)
SU4 - Chronic higher intensity use: Past OD events, chronic use and frequent use	54 (59)	22 (63)	19 (66)	13 (57)
Total	90	35 (40)	39 (33)	23 (26)

Results: Living Situation

- 19-29 least likely to have a significant partner
- Only 12% people lived alone
- 20% had precarious housing situation (unstable/staying with someone)

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Significant partner~	33 (37)	20	51	47	54	43	29
Lives Alone	11 (12)						
Lives with family	58 (64)	69	72	47	69	65	63
Housing – Own/rent	67 (74)	71	79	73	84	87	67
Staying with someone else	10 (11)	5 (14)	5 (10)	2 (9)	1 (8)	2 (9)	7 (13)
Unstable housing	8 (9)	4 (11)	4 (0)	3 (13)	1 (8)	1 (4)	6 (11)

Blank = Suppressed percentages with cell sizes below 5

~ unknown/missing greater than 10%

Bold = Chisq for Fisher's exact test $p < 0.05$

Data based on current and previous recent events

Results: Work and Income

- Only 28% working – higher for younger and SU1/2
- Trades – most common industry (where industry documented)
- 19% income source is disability

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Working – steady~	25 (28)	40	31		46	26	24
Not working~	43 (48)	34	55	65	15	52	54
Industry – Trades~	31 (34)	20	48	43			37
Income – Government Assistance	11 (12)						11
Income – Disability	17 (19)		27	26		21	22

Blank = Suppressed percentages with cell sizes below 5

~ unknown/missing around 20%

Bold = Chisq for Fisher's exact test $p < 0.05$

Data based on current and previous recent events

Results: Social Support Availability

- Rating Scale SS1-5 assigned by data extraction nurses based on the charts
- Over half have some to good level of support - Parents, spouse/partner and other family main source of support

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
SS1 - Lives Alone, no supports ; SS2 – has someone who is looking in on them	14 (16)	17		21			22
SS3 – has family/support person but not regular contact	18 (20)	25	20				20
SS4 – has regular contact with family/support but unable to support fully	25 (28)	20	44	21		26	29
SS5 – has family /support person who is very supportive	30 (33)	31	24	44	38	52	24

Blank = Suppressed percentages with cell sizes below 5
Data based on current and previous recent events

Results: Overdose Event, Listed Substances

- Based on chart documentation of event substances, not the toxicology report
- Heroin most common for SU4; other opioids most common for 30yo+
- Alcohol and crack cocaine associated with SU1/2
- Majority had one (42%) or two (36%) substances listed for event on chart

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Fentanyl	16 (18)	23				21	17
Heroin	31 (34)	42	38				48
Other opioid	35 (39)	17	51	60		52	35
Crack cocaine	22 (24)	34	20		46		24
Alcohol	26 (29)	31	24	30	46	26	25

Blank = Suppressed percentages with cell sizes below 5

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Data based on current event only

Substances add up to more than 100% due to polysubstance use

Results: Overdose Event, Using Alone

- Alone at time of events: 63% alone and 20% information missing. SU 1 and 2 least likely to be alone
- 93% did not get naloxone before paramedics arrived
- More than half (54%) found by person in the household

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Found by partner	21 (23)		38	35	46	34	12
Found by other household member	28 (31)	40	24	22		27	39
Found by friends	18 (20)	26					20

Blank = Suppressed percentages with cell sizes below 5

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Data based on current event only

Substances add up to more than 100% due to polysubstance use

Results: Recent/Ongoing Stressors pre-Event

- Physical trauma or pain most common stressor and highest for 50+yo
- SU3s and 50+yo most multiple stressors and high physical pain and financial stress
- No stressors listed for SU1/2 (38%)

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Financial/Job Loss	25 (28)	22	20	47		56	20
Physical trauma/Pain	44 (49)	29	48	82	31	60	48
Transition (move etc.)	14 (16)	17					20
Personal/Loss/ Relationship	23 (26)	20	37	17		39	22
Sectioned/Suicidal	18 (20)	17	21	26		30	18
No stressors listed	11 (12)	17			38		9
1-2	46 (51)	51	55	43	38	39	59
3+	33 (37)	31	31	52	23	56	31

Blank = Suppressed percentages with cell sizes below 5

***Bold** = Chisq for Fisher's exact test $p < 0.05$*

Stressors add up to more than 100%

Data based on current event only

Results: GP and Rx Opioids

- 77% had listed GP in chart at overdose event
- No documentation of past/current prescription opioids in 48%
- Past use highest for 19-29yo; current use highest in 50+yo and SU3

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
GP	69 (77)	66	79	91	84	87	70
Prescription opioids – no record	43 (48)	48	48	43	84	30	46
Prescription opioids – past use	24 (26)	40	24	9		21	33
Prescription opioids – current use	22 (24)		28	48		43	20

Blank = Suppressed percentages with cell sizes below 5

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Results: Medical history for Pain and Substance Use

- Pain management significant for those 50+yo
- Over half (52%) had past treatment of some kind for substance use; highest amongst SU4
- 33% expressed desire for treatment for substance use at admission

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Current or past pain management issue	36 (40)	20	37	78	23	56	37
Past tx for substance use	47 (52)	57	52	52	0	30	74
Desire for tx	30 (33)	43	21	35		26	39

Results: Pre-Event diagnosis of Mental Health and/or Substance Use Condition

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
None Documented	10 (11)				62		
Depression or mood disorders	43 (47)	51	37	56		69	46
Psychosis/ Bipolar	14 (16)	23	17				25
Personality disorders	13 (14)						
Suicidality	29 (32)	29	31	43		43	33
Alcohol and substance use addiction	66 (73)	74	76	70	8	26	60
1 condition	29 (32)	23	34	39	23	34	33
2-3 conditions	26 (29)	37	28	17		26	35
4 or more conditions	25 (28)	28	24	34		30	31

Blank = Suppressed percentages with cell sizes below 5

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Data based on current event and recent visits

Mental health dx add up to more than 100%

Results: Outcome & Subsequent interactions

Clients with earlier events will have a longer follow up period

	Overall N (%)	19-29 %	30-49 %	50+ %	SU1/2 %	SU3 %	SU4 %
Visit outcome							
<i>Death</i>	1						
<i>Admitted to Unit</i>	71 (79)	74	79	82	76	86	75
<i>Not admitted (ER admit)</i>	19 (21)	25	21		23		24
<i>Referral to MH and SU service</i>	42 (47)	51	41	47		52	48
<i>Referral to GP</i>	27 (30)	20	38	35		26	33
Subsequent visit							
<i>None</i>	33 (37)	34	38	35	61	30	33
<i>Overdose ED visit</i>	32 (36)	48	34			26	42
<i>MH visit</i>	19 (21)	25		26		21	24
<i>Other ED Visit</i>	31 (34)	34	31	43		39	35

Blank = Suppressed percentages with cell sizes below 5

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Subsequent visits add up to more than 100%

Results: Type of Mental Health or Substance Use Referral

MH or SU service – where specified (of 42 referrals)	n
Fraser Health service (n=19)	
<i>Community Substance Use Services</i>	3
<i>Mental Health Centre</i>	10
<i>Withdrawal Management Unit</i>	3
<i>Rapid Access Clinic (Psychiatry), Short Term Access to Treatment (residential), Intensive Residential Treatment , Detox</i>	4
Health Service Provider- Contractor for FH's MHSU Services (n=7)	
<i>Community Substance Use Services</i>	4
<i>Stabilization Transition Living Residence</i>	2
<i>Intensive Residential Treatment</i>	1
Other (n=13)	
<i>Missing</i>	8
<i>Community Substance Use Services</i>	1
<i>Physician</i>	3
<i>Private OAT</i>	1

Appendix – Household/Housing Situation

		Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Household Situation	Unknown	2 (2)	0 (0)	0 (3)	1 (4)	0 (0)	0 (0)	2 (4)
	Lives Alone	11 (12)	1 (3)	1 (14)	6 (26)	2 (15)	4 (17)	5 (9)
	Lives with family	58 (64)	24 (69)	24 (72)	11 (48)	9 (69)	15 (65)	34 (63)
	Lives with roommate/friends	11 (12)	6 (17)	6 (3)	3 (13)	2 (15)	3 (13)	6 (11)
	Lives in congregate setting	6 (7)	4 (11)	4 (3)	1 (4)	0 (0)	1 (4)	5 (9)
	Other	1 (1)	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	1 (2)
Housing situation	Unknown	3 (3)	1 (3)	1 (3)	1 (4)	0 (0)	0 (0)	3 (6)
	Own/rent	67 (74)	25 (71)	25 (79)	17 (74)	11 (85)	20 (87)	36 (67)
	Staying with someone else	10 (11)	5 (14)	5 (10)	2 (9)	1 (8)	2 (9)	7 (13)
	Unstable housing	8 (9)	4 (11)	4 (0)	3 (13)	1 (8)	1 (4)	6 (11)
	Other	1 (1)	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	1 (2)

Small numbers, interpret with cautions

Based on OD events and recent other contacts with Fraser Health

Appendix – Current or Most Recent Occupation at time of the event

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Unknown	16 (18)	8 (23)	8 (10)	5 (22)	4 (31)	2 (9)	10 (19)
In School	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
School Age, not in school	1 (1)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)	0 (0)
Working - steady	25 (28)	14 (40)	14 (31)	2 (9)	6 (46)	6 (26)	13 (24)
Working - casual	3 (3)	1 (3)	1 (3)	0 (0)	0 (0)	2 (9)	1 (2)
Not working	43 (48)	12 (34)	12 (55)	15 (65)	2 (15)	12 (52)	29 (54)
Other	1 (1)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (2)

Small numbers, interpret with cautions
Based on OD events and recent other contacts with Fraser Health

Appendix – Where does/did the person work (n=67)?

BUSINESS DEGREE, FINANCE, WORKING A FEW MONTHS IN DAD'S OFFICE	OPENED UP A UPS STORE (used to be a professional engineer 6 yrs ago)	freelance mechanic	worked at medical warehouse for 3 years, quit his job a week and a half prior to event because he felt emotionally and verbally abused
CARPENTRY	OUTREACH WORKER	has had jobs in pubs and restaurants, last worked 5 y ago	worked for Parks Board before retirement
CONSTRUCTION	OWNER OF A FLOOR INSTALLATION COMPANY	in school, grade 12 student	working in father's meatshop
CONSTRUCTION PROJECT MANAGER - COMMERCIAL AND INDUSTRIAL	PICKS UP ODD JOBS FROM FRIENDS, PREVIOUS OCCUPATION UNCLEAR	LABOUR JOBS IN CONSTRUCTION INDUSTRY, STUDIED CARPENTRY	working in film industry (not specified)
CONSTRUCTION WORKER	PIPEFITTER AND TUGBOAT WELDER	labor jobs	works as a roofer
COOK	PLEXIGLASS PRINTER	mechanic	works as plumber
COOK, NOTE TRAINED AS A PLUMBER BUT UNABLE TO DO THAT WORK DUE TO INJURY	Power Systems Operator for BC Hydro, worked there for 25 years, fired recently as he relapsed after 4 years of sobriety	millwright	works at pizza restaurant
DRIVER	RAILWAY FOREMAN	painter for a construction company	works for telecommunications (not specified)
FARMER	ROOFING	self-employed, CEO of his business (not specified)	works selling plumbing supplies
FULL TIME STUDENT UNTIL 3 WEEKS AGO	Rona Hardware	sells used cars	used to work in sales, now supported through disability, but still works on and off
FURNITURE SALESMAN	SECURITY INSTALLATIONS, PREVIOUSLY A PLUMBER	studying to become an iron worker, type of employment not recorded	WORKED IN CONSTRUCTION AND AT A GREENHOUSE, NOW SUPPORTS HIMSELF THROUGH PETTY CRIME
HEAVY DUTY MECHANIC	SOCIAL WORKER	trained as a welder	WORKS WITH CHEMICALS
HEAVY EQUIPMENT OPERATOR	USED TO WORK AS A DRIVER	truck driver in the past, painter in the past	completed application to begin schooling in September 2016 (not specified what kind of program he wants to enroll in)
LABOURER	WAREHOUSE WORK	used to own a moving company, currently on income assistance	MILLWRIGHT
LANDSCAPER	WAREHOUSE WORKER	used to work as a crane/machine operator, injured at work several times	OIL FIELD WORKER
LONGSHOREMAN	WELDING	used to work as welder and carpenter, not working for the last 5 years	
MECHANIC	WORKS IN WAREHOUSE	used to work in construction (no details when)	

Appendix – Industry

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Unknown	21 (23)	10 (29)	10 (17)	6 (26)	4 (31)	3 (13)	14 (26)
Manager/Professional/ Clerical	5 (6)	1 (3)	1 (7)	2 (9)	3 (23)	1 (4)	1 (2)
Sales and Service Occupations	15 (17)	10 (29)	10 (14)	1 (4)	1 (8)	5 (22)	9 (17)
Trades	31 (34)	7 (20)	7 (48)	10 (43)	1 (8)	10 (43)	20 (37)
Transport	4 (4)	1 (3)	1 (3)	2 (9)	0 (0)	1 (4)	3 (6)
Natural Resources	2 (2)	1 (3)	1 (0)	1 (4)	0 (0)	0 (0)	2 (4)
Manufacturing and Utilities	9 (10)	5 (14)	5 (7)	1 (4)	3 (23)	2 (9)	4 (7)
Other	1 (1)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)	0 (0)

Based on categories used by Statistics Canada; assigned during data entry based on work description
 Small numbers, interpret with cautions
 Based on OD events and recent other contacts with Fraser Health

Appendix – Income Source

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Unknown	18 (20)	8 (23)	8 (14)	6 (26)	4 (31)	4 (17)	10 (19)
Not working/no documented source	10 (11)	5 (14)	5 (14)	1 (4)	1 (8)	1 (4)	8 (15)
Government Assistance	11 (12)	3 (9)	3 (14)	4 (17)	1 (8)	4 (17)	6 (11)
Disability	17 (19)	3 (9)	3 (28)	6 (26)	0 (0)	5 (22)	12 (22)
<i>WCB</i>	3 (3)	0 (0)	0 (3)	2 (9)	0 (0)	1 (4)	2 (4)
Student	2 (2)	0 (0)	0 (0)	0 (0)	1 (8)	1 (4)	0 (0)
Illicit Means	2 (2)	1 (3)	1 (0)	1 (4)	0 (0)	0 (0)	2 (4)
Employed	26 (29)	14 (40)	14 (31)	3 (13)	6 (46)	7 (30)	13 (24)
Other	4 (4)	1 (3)	1 (0)	2 (9)	0 (0)	1 (4)	3 (6)

Small numbers, interpret with cautions

Based on OD events and recent other contacts with Fraser Health

Appendix – Who Discovered The Person

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Partner	21 (23)	2 (6)	2 (38)	8 (35)	6 (46)	8 (35)	7 (13)
Other Household member	28 (31)	14 (40)	14 (24)	5 (22)	1 (8)	6 (26)	21 (39)
Friends	18 (20)	9 (26)	9 (14)	4 (17)	3 (23)	4 (17)	11 (20)
By standers	4 (4)	2 (6)	2 (7)	0 (0)	1 (8)	1 (4)	2 (4)
Staff/peers at congregate setting	2 (2)	1 (3)	1 (0)	1 (4)	0 (0)	0 (0)	2 (4)
Other	9 (10)	2 (6)	2 (7)	5 (22)	0 (0)	4 (17)	5 (9)

Small numbers, interpret with cautions
Based on OD events and recent other contacts with Fraser Health

Appendix – Substance(s) listed as cause/likely cause for event in the chart

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Fentanyl	16 (18)	8 (23)	8 (10)	3 (13)	2 (15)	5 (22)	9 (17)
Heroin	31 (34)	15 (43)	15 (38)	4 (17)	1 (8)	4 (17)	26 (48)
Other opioid - prescription or illicit	35 (39)	6 (17)	6 (52)	14 (61)	4 (31)	12 (52)	19 (35)
Cocaine/Crack	22 (24)	12 (34)	12 (21)	4 (17)	6 (46)	3 (13)	13 (24)
Amphetamine/Meth	10 (11)	1 (3)	1 (21)	2 (9)	2 (15)	2 (9)	6 (11)
Alcohol	26 (29)	11 (31)	11 (24)	7 (30)	6 (46)	6 (26)	14 (26)
Other	25 (28)	7 (20)	7 (34)	7 (30)	4 (31)	7 (30)	14 (26)
<i>Benzodiazepine</i>	6 (7)	3 (9)	3 (7)	1 (4)	0 (0)	2 (9)	4 (7)
<i>Marijuana</i>	8 (9)	4 (11)	4 (10)	0 (0)	2 (15)	3 (13)	3 (6)

Small numbers, interpret with cautions

NOT based on toxicology, based on patient and physician report

Based on OD events and recent other contacts with Fraser Health

Appendix – Multiple Substance Use

Number of Substances	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
1	38 (42)	17 (49)	10 (34)	10 (43)	5 (38)	10 (43)	23 (43)
2	32 (36)	11 (31)	12 (41)	8 (35)	4 (31)	10 (43)	18 (33)
3	17 (19)	7 (20)	4 (14)	5 (22)	4 (31)	3 (13)	10 (19)
4+	3 (3)	0	3 (10)	0	0	0	3 (6)

Substances as reported in charts by patient or noted by clinical staff
 Small numbers, interpret with cautions
 Based on OD events and recent other contacts with Fraser Health

Appendix – Stressors at time of the event

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Recent incarceration	4 (4)	3 (9)	3 (3)	0 (0)	0 (0)	0 (0)	4 (7)
Police involvement/incident	5 (6)	3 (9)	3 (0)	1 (4)	3 (23)	0 (0)	2 (4)
Section 28	3 (3)	2 (6)	2 (3)	0 (0)	0 (0)	1 (4)	2 (4)
Financial problems	23 (26)	7 (20)	7 (21)	10 (43)	1 (8)	11 (48)	11 (20)
Job loss	5 (6)	1 (3)	1 (7)	2 (9)	0 (0)	5 (22)	0 (0)
Romantic relationship problems	13 (14)	2 (6)	2 (28)	2 (9)	0 (0)	4 (17)	9 (17)
Other conflict	15 (17)	8 (23)	8 (3)	4 (17)	1 (8)	7 (30)	7 (13)
Suicidal at time of event	17 (19)	5 (14)	5 (21)	6 (26)	1 (8)	7 (30)	9 (17)
Recent detox, daytox or addiction treatment	8 (9)	6 (17)	6 (3)	1 (4)	0 (0)	1 (4)	7 (13)
Chronic condition currently causing distress	13 (14)	1 (3)	1 (17)	7 (30)	1 (8)	4 (17)	8 (15)
Physical trauma/injury/pain event (e.g. motor vehicle accident, surgery etc.)	37 (41)	9 (26)	9 (41)	15 (65)	4 (31)	11 (48)	22 (41)
Recent move (past 3 months).	11 (12)	5 (14)	5 (10)	2 (9)	1 (8)	1 (4)	9 (17)
Other	37 (41)	13 (37)	13 (38)	10 (43)	7 (54)	12 (52)	18 (33)
None listed in the chart	11 (12)	5 (14)	5 (14)	2 (9)	4 (31)	1 (4)	6 (11)

Small numbers, interpret with cautions

Limited to past 3 months

Based on OD events and recent other contacts with Fraser Health

Appendix – Mental Health and Substance Use

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
None documented in the chart	11 (12)	5 (14)	5 (14)	2 (9)	8 (62)	3 (13)	0 (0)
Anxiety disorder	14 (16)	9 (26)	9 (7)	3 (13)	0 (0)	4 (17)	10 (19)
Depressive disorder	41 (46)	16 (46)	16 (38)	13 (57)	2 (15)	15 (65)	24 (44)
Psychosis illness (bi-polar, schizophrenia)	14 (16)	8 (23)	8 (17)	1 (4)	0 (0)	0 (0)	14 (26)
Suicidality	29 (32)	10 (29)	10 (31)	10 (43)	1 (8)	10 (43)	18 (33)
Alcohol or substance use disorder	66 (73)	26 (74)	26 (76)	16 (70)	1 (8)	15 (65)	50 (93)
PTSD	5 (6)	2 (6)	2 (3)	2 (9)	2 (15)	0 (0)	3 (6)
Eating Disorder	1 (1)	1 (3)	1 (0)	0 (0)	0 (0)	1 (4)	0 (0)
Other (e.g. ADHD etc.)	35 (39)	15 (43)	15 (34)	8 (35)	3 (23)	9 (39)	23 (43)
Brain Injury	4 (4)	1 (3)	1 (7)	1 (4)	0 (0)	1 (4)	3 (6)

Small numbers, interpret with cautions

Adds up to more than 100% as many patients have multiple diagnoses

Based on OD events and recent other contacts with Fraser Health

Appendix – Outcome

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
Death	1 (1)	1 (3)	1 (0)	0 (0)	1 (8)	0 (0)	0 (0)
Admitted to hospital	71 (79)	26 (74)	26 (79)	19 (83)	10 (77)	20 (87)	41 (76)
<i>Acute</i>	11 (12)	4 (11)	4 (7)	5 (22)	2 (15)	2 (9)	7 (13)
<i>HAU/ICU/CTU</i>	40 (44)	13 (37)	13 (48)	11 (48)	6 (46)	13 (57)	21 (39)
<i>Not Admitted</i>	19 (21)	9 (26)	9 (21)	4 (17)	3 (23)	3 (13)	13 (24)
<i>Other</i>	9 (10)	3 (9)	3 (14)	1 (4)	2 (15)	2 (9)	5 (9)
<i>Psych</i>	4 (4)	3 (9)	3 (3)	0 (0)	0 (0)	1 (4)	3 (6)
<i>Unknown</i>	7 (8)	3 (9)	3 (7)	2 (9)	0 (0)	2 (9)	5 (9)
Left without completing treatment or against medical advice	19 (21)	10 (29)	10 (17)	4 (17)	0 (0)	5 (22)	14 (26)
Referral to Fraser Health Mental Health and Substance Use service	42 (47)	18 (51)	18 (41)	11 (48)	4 (31)	12 (52)	26 (48)
Referred back to GP	27 (30)	7 (20)	7 (38)	8 (35)	3 (23)	6 (26)	18 (33)
Connected to private pay addiction services	1 (1)	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	1 (2)
Discharged with no specific follow-up plan	9 (10)	4 (11)	4 (3)	4 (17)	4 (31)	1 (4)	4 (7)
Other	30 (33)	12 (34)	12 (34)	6 (26)	5 (38)	8 (35)	17 (31)

Small numbers, interpret with cautions

Based on OD events and recent other contacts with Fraser Health

Appendix – Subsequent Visits

	Overall N (%)	19-29 n (%)	30-49 n (%)	50+ n (%)	SU1/2 n (%)	SU3 n (%)	SU4 n (%)
None	33 (37)	12 (34)	12 (38)	8 (35)	8 (62)	7 (30)	18 (33)
Death	4 (4)	0 (0)	2 (7)	2 (9)	0 (0)	0 (0)	4 (7)
Additional ED visit for overdose	32 (36)	17 (49)	17 (34)	4 (17)	3 (23)	6 (26)	23 (43)
Additional ED visit for mental health	19 (21)	9 (26)	9 (14)	6 (26)	1 (8)	5 (22)	13 (24)
Additional ED visit not due to mental health or overdose	31 (34)	12 (34)	12 (31)	10 (43)	3 (23)	9 (39)	19 (35)
Any non-ED treatment visit to FH Service	12 (13)	3 (9)	3 (14)	5 (22)	1 (8)	5 (22)	6 (11)

Small numbers, interpret with cautions

Based on OD events and recent other contacts with Fraser Health