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Efficiency versus thoroughness in medication review:

a qualitative interview study in UK primary care

Abstract

Background
Medication reviews may improve the safety of prescribing and the National Institute for Health and Care Excellence (NICE) highlights the importance of involving patients in this process.

Aim
To explore GP and pharmacist perspectives on how medication reviews were conducted in general practice in the UK.

Design and setting
Analysis of semi-structured interviews with GPs and pharmacists working in the South West of England, Northern England, and Scotland, sampled for heterogeneity. Interviews took place between January and October 2017.

Method
Interviews focused on experience of medication review. Data saturation was achieved when no new insights arose from later interviews. Interviews were analysed thematically.

Results
In total, 13 GPs and 10 pharmacists were interviewed. GPs and pharmacists perceived medication review as an opportunity to improve prescribing safety. Although interviewees thought patients should be involved in decisions about their medicines, high workload pressures meant that most medication reviews were conducted with limited or no patient input. For some GPs, a medication review was done *'in the quickest way possible to say that it was done'*. Pharmacists were perceived by both professions as being more thorough but less time efficient than GPs, and few pharmacists were routinely involved in medication reviews even in practices employing a pharmacist. Interviewees argued that it was easier to continue medicines than it was to stop them, particularly because stopping medicines required involving the patient and this generated extra work.

Conclusion
Practices tended to prioritise being efficient (getting the work done) rather than being thorough (doing it well), so that most medication reviews were carried out with little or no patient involvement, and medicines were rarely stopped or reduced. Time and resource constraints are an important barrier to implementing NICE guidance.

Keywords
care of older people; medication review; polypharmacy; primary health care; qualitative research.

INTRODUCTION

The number of medicines that patients take is increasing.[1] This is driven by a complex mix of an ageing population,[2] an increase in multimorbidity,[2–4] an increasing tendency to prescribe preventive medicines to asymptomatic patients,[5] and applying multiple single-disease guidelines to patients with multimorbidy.[3] Drug-related problems, such as adverse drug reactions, high-risk prescribing, medicine errors, and poor adherence, increase with the number of medicines prescribed[6–9] and result in 6.5% of all hospital admissions.[10,11]

Polypharmacy is not always harmful, however, and Duerden *et al* make the distinction between appropriate polypharmacy, such as where multiple medicines improve quality of life, prolong life, and cause minimal harm, and problematic polypharmacy, where the balance tips and the potential harm of some medicines outweighs the potential benefit.[3] Frail older patients with multimorbidity are most at risk of problematic polypharmacy because they benefit less from strict control of risk factors and are more at risk of the side effects of certain medicines.[12] Treatment burden (the effort of looking after one's health) should also be considered.[13] Taking lots of medicines at different times of the day is challenging for many patients, particularly people with frailty, impaired cognition, or reduced dexterity.[14] One opportunity to reduce problematic

polypharmacy is to conduct a regular medication review, defined by the National Institute for Health and Care Excellence (NICE) as *'a structured, critical examination of a person's medicines with the objective of reaching an agreement with the person about treatment, optimising the impact of medicines, minimising the number of medicine-related problems and reducing waste'.*[15] Though others may also benefit, NICE recommends that patients who are frail and those with multimorbidity and/ or polypharmacy should be prioritised for medication review.[15] The STOPP/START guideline offers some guidance on stopping or tapering down medicines for frail older patients.[16]

Reflecting rising GP workloads and problems consequent of low GP recruitment and retention,[17] there are initiatives across the UK to increase the number of practice-based pharmacists (PBPs).[18] These pharmacists are employed by the GP surgery and carry out non-dispensing roles, such as reconciling medicines following hospital discharge and reviewing prescription requests from patients and community pharmacists. Some PBPs have a role in patient-facing activities that include medication review. Relatively little is known about how official guidelines for medication review are being enacted within routine practice. The aim of this study was to explore how GPs and pharmacists carry out medication reviews in general practice in the UK.

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METHOD

Setting, design, and participants

The researchers conducted semi-structured interviews with GPs and pharmacists. Interviewees were recruited from practices enrolled in the 3D Study, a multicentre, cluster-randomised controlled trial of an organisational intervention for people with multimorbidity.[19] As part of the 3D intervention, a pharmacist conducted a remote medication review and made recommendations to the GP to discuss it with the patient. In this article the authors focus on GP and pharmacist perspectives on usual practice of medication review, outside the context of the 3D intervention.

Interviewees were purposively sampled to include pharmacists and GPs with a range of different experiences and working in different contexts. They were recruited from practices who had delivered the 3D Study intervention and from those in the usual-care arm of the study. The authors included community, practice-based, and clinical commissioning group (CCG) pharmacists and GPs from practices that did and did not employ a practice pharmacist. GPs and pharmacists working in different geographical regions including the South West of England, Northern England, and Scotland were also sampled. The authors stopped recruiting once data saturation had been reached and no new insights arose from later interviews.

Research team and data collection

The research team comprised academic GPs, a qualitative researcher, and a primary care researcher. All interviews were audiorecorded and carried out by a research team GP between January 2017 and October 2017 either face-to-face in GP surgeries or over the phone. Interviews were based on topic guides developed by GPs from the research team tailored for either GPs or pharmacists (the common topic guide for introduction and background for GPs and pharmacists is available from the authors on request, Box 1 shows the topic guide for GPs, and Box 2 for pharmacists). GPs were asked to choose a patient with polypharmacy ('a case study' patient) who was not enrolled in the 3D Study and, referring to their medical records, to talk through how they would review their medicines. Practice-based pharmacists were asked to give examples of medication reviews they had done within general practice. The eight pharmacists who delivered the 3D Study intervention were asked to talk through how they carried out a medication review for a number of case study patients enrolled in the study. The interviews lasted 40–60 minutes — the first half of the interview focused on usual practice and the second half focused on the 3D intervention (article currently being written and to be submitted for publication).

Analysis

The audiorecordings were transcribed and anonymised. The transcripts were imported

Box 1. GP interview topic guide

Topic	Questions
Usual practice	• Before we get into the specifics, I'm interested in understanding how repeat medications are reviewed in your practice. (How often, within/outside of consultations, patient involvement, purpose, barriers, facilitators?) • Can you tell me about your experience of reviewing medications for patients with polypharmacy? (Different from other medication reviews?) • Do pharmacists play a role in medication reviews in your practice? (CCG pharmacist or practice pharmacist?) • Are any other non-GP staff involved in medication reviews in your practice?
Usual practice case patients	• Can you think of any non-3D patients who are prescribed lots of medications, whom you could look up on EMIS? • Could you talk through how you might review their medications? (Is that typical?)
3D Study	• I'd like to ask you to focus more on the 3D Study now. How have you found reviewing patients' medications during the 3D consultations? (Purpose of the reviews; pharmacist recommendations, patient involvement, types of changes made, examples.)
3D Study case patients (2–3 for each interview)	• Can you have a read over the record for this patient and talk me through how you might have come to the decisions about their medications? (Changes made; pharmacist recommendations — looked at, useful, acted on, concerns; patient involvement; typical of other reviews; same as/different from usual practice.)
Any other issues	• Any other issues you would like to raise?

3D Study = a multicentre, cluster-randomised controlled trial of an organisational intervention for people with multimorbidity.[19] CCG = clinical commissioning group EMIS = Egton Medical Information Systems.

Box 2. Pharmacist interview topic guide

Topic	Questions
Usual practice	• Before we get into the specifics, I want to find out a bit more about your role as a pharmacist outside of the 3D Study. In particular, whether you are involved in medication reviews for patients? (Driven by cost or CCG targets or led by the practice? Face-to-face or computer led? Useful or not? Barriers, facilitators.)
	• Can you tell me about the last time you were involved in medication reviews for a practice? (Typical?)
	• How have you found working with practices?
	• Have you been involved in medication reviews for patients with polypharmacy? (Driven by cost or CCG targets or led by the practice? Face-to-face or computer led? Useful or not? Barriers, facilitators.)
3D Study case patients (2–3 for each interview)	• Before we go on to talk about the case study patients, can you tell me any thoughts you have about the medication reviews for the 3D Study? (Working with practices, doing the reviews, purpose, useful.)
	• Can you have a read over the record for this patient and talk me through the process you might have gone through when you reviewed this patient's medications?
	• Recommendations (types of medicines stopped/started, purpose of stopping/starting them, for example, safety, pill burden, guidelines).
	• Typical of other 3D reviews?
	• Same as/different from usual practice?
	• Reflect on whether the GP acted on the recommendations (typical?).
Any other issues	• Any other issues you would like to raise?

3D Study = a multicentre, cluster-randomised controlled trial of an organisational intervention for people with multimorbidity.[19] CCG = clinical commissioning group. EMIS = Egton Medical Information Systems.

into NVivo (version 11) for analysis. Field notes taken immediately after the interviews were reviewed to aid interpretation of the meaning behind participant responses. The interviews were analysed thematically.[20] A GP researcher read and coded all the transcripts. Another GP researcher, a qualitative researcher, and a primary care researcher from the study team read and coded a subset of transcripts independently. Emerging themes were discussed and a coding structure was developed over several team meetings between the authors. The remaining interviews were coded using the agreed framework. As data analysis continued, the authors modified the coding framework. Mind maps were used to group codes under overarching themes.

RESULTS
In total, 10 pharmacists and 13 GPs were interviewed about the usual practice of medicine review, Table 1 shows the participant characteristics. Three main themes were identified: organisation of medication reviews and repeat prescribing, the purpose of medication reviews, and patient-centredness.

The organisation of medication reviews and repeat prescribing
Though most medication reviews undertaken in participating practices were completed by GPs, medication review involved many individuals across the primary care team. Pharmacists were perceived as being less time efficient than the GPs and, of the six practice-based pharmacists, only one was routinely involved in medication review.

The role of others in medication reviews. Prescription requests in participating surgeries were triaged by administrative prescription clerks, who performed a number of checks and flagged up when a medication review was due to the GP. Requests that passed the checks were sent to the GPs in a separate folder for electronic signing. For requests where the medication review was out of date, GPs could then either ignore this and sign the prescription, carry out a remote medication review using the patient's notes, or arrange a medication review appointment over the phone, face-to-face, or in the patient's home:

'We do rely on the prescription ladies … when we get prescription requests in from the patients the prescription ladies will funnel that into two streams. One is a everything's up to date, you don't have to think about this kind of ones … then it comes through on another pile and you're kind of alert to the fact that there's the query.' (GP7, female [F])

GPs in half of the practices reported that more experienced nurses, particularly nurse prescribers, carried out some medication reviews, usually for more straightforward patients who had been prescribed a small number of medicines for a small number of long-term conditions (for example, patients only prescribed asthma medicines who had had a nurse-led asthma review):

'… both nurse prescribers … so they're both quite experienced and we felt that for stable people with chronic diseases, which the nurses are better than GPs at managing anyway, it [medication review] *was an appropriate thing for them to do by virtue of the fact that GPs can't do everything.'* (GP10, male [M])

Only one of the six practice-based pharmacists was routinely involved in medication review. Both professions perceived pharmacists to be more thorough in reviewing medications, with GPs often

Table 1. Participant characteristics

Characteristic	*n*
Pharmacists (*N* = 10)	
Sex	
Male	3
Female	7
Estimated age, years	
31–40	6
41–50	4
Time as qualified pharmacist, years	
5–9	4
10–15	3
>15	3
Time working in primary care (for practice-based pharmacists only, *N* = 6), years	
<2	3
2–10	0
>10	3
Job role	
Community pharmacist	1
CCG pharmacist	3
Practice-based pharmacist	6
Intervention or usual-care practice	
Delivered the 3D Study intervention	8
Working in usual-care practice	2
GPs (*N* = 13)	
Sex	
Male	5
Female	8
Estimated age, years	
31–40	6
41–50	2
51–60	5
Time as qualified GP, years	
<5	3
5–9	4
10–15	3
>15	3
Job role	
GP partner	10
Salaried GP	3
Intervention or usual-care practice	
Intervention practice	9
Usual care	4

3D Study = a multicentre, cluster-randomised controlled trial of an organisational intervention for people with multimorbidity.[19] CCG = clinical commissioning group.

completing these during consultations for other problems or while signing repeat prescriptions:

'… they [pharmacists] *would probably ask whether they ever missed the tablets, are delayed in taking them, are, um, have you taken them having any side effects, if they understand what reasons they're taking all the tablets for, probably do a better job than me … the reality is that most people when*

they come in have got three other things that they want to talk about.' (GP4, M)

However, GPs were perceived by both GPs and pharmacists to be more time efficient, with a belief that pharmacists required protected time to carry out a face-to-face medication review focused just on medicines, which was hard to organise given the other work the pharmacists were expected to do:

'I'm meant to be doing med reviews for the nursing homes but, um, I just run out of time … it's just not feasible so I've been trying to do what I can but it's time.' (Pharmacist [P]2, F)

Use of electronic prescribing systems. Many GPs and pharmacists found the use of electronic as opposed to paper prescriptions helpful for completing a medication review, particularly in terms of flagging up interactions and having 'information at your fingertips':

'I pay a lot more attention when I'm doing it electronically … we'd get whole bundles of them and there's no time to do anything but just sign them really. But actually if I've got it electronically, I do tend to often go into the patients' records more 'cos it's … it's easier to do so.' (GP6, F)

However, some found the system clunky and found it difficult to communicate with patients via the electronic prescribing system:

'… the big problem with electronic prescribing is that there is no way … of communicating a message to a patient anymore.' (GP4, M)

Case finding. GPs and pharmacists discussed the merits of identifying older patients with polypharmacy for medication reviews but only two practices routinely searched for these patients:

'I'm specifically trying to look at elderly patients on 10, 15 medicines, or more, getting patients to come in and sit down with me for 20 to 30 minute appointment, going through their medicines.' (P6, F)

The purpose of medication reviews
Interviewees reported that the purpose of medication reviews included stopping or reducing the dose of medicines (deprescribing), but they acknowledged that this required patient involvement and

generated work, and that it was easier to continue medicines than to stop them. Pharmacists described always checking for interactions and monitoring blood tests but this was not always done by GPs.

Reducing and stopping inappropriate medicines. As part of a medication review, interviewees described stopping or tapering down medicines that were no longer indicated, were potentially causing more harm than good, or were resulting in pill burden for patients and carers:

'… *people being on ferrous sulphate or vitamin D … actually when they were re-measured it was now not needed … There's a lot of elderly who seem to have been on amitriptyline … combine that with other meds that might only have a small anticholinergic score and it can soon add up.*' (P1, F)

Interviewees felt it was not necessary to treat frailer older patients as aggressively for some of their long-term conditions, citing guidelines that provided different treatment targets for these patients:

'… *well I think actually when you're elderly and frail there's a lot of other considerations … so somebody's cognition, somebody's concordance, somebody's ability, and in fact the appropriateness of a lot of medicines can change rapidly … that's when it's more important to actually check whether they're happy to take these medicines, … whether we're doing more harm than good.*' (GP13, F)

For many interviewees the key perceived barriers to stopping medicines included: fear of causing problems; not wanting to stop medicines that had been started by hospital specialists; and a lack of clear evidence and guidelines around stopping medicines. Interviewees felt that patients might be reluctant or have no incentive to stop medicines, particularly those that they had taken for a long time and medicines for long-term pain:

'*I think we're all rather allergic to stopping things … To take the time to talk all this through and to persuade a patient to come off would be quite difficult.*' (GP1, F)

There was also a concern that stopping medicines generated more work and hassle for health professionals, the surgery, and patients:

'… *it's easier to just keep things on the*

medication list than really dig into it and stop things.*' (P9, M)

Many of the pharmacists and a few GPs had experience of using the STOPP/ START guidelines[16] when reviewing a patient's medicines. Though STOPP was perceived to provide some rationale for stopping medicines, some participants felt that guidance on stopping medicines was usually less clear than guidance on starting medicines:

'… *you get a Q-risk of over whatever then you start a statin … it's not as practical — the advice for de-prescribing.*' (P9, M)

Checking blood tests and for drug–drug interactions. Pharmacists felt that checking whether the monitoring blood tests were up to date, with a view to altering drug doses accordingly, and checking for drug–drug interactions was an important part of the medication review process. GPs reported giving less attention to this:

'… *so because of his age I'd probably do a creatinine clearance … especially elderly patients … I mean I think that's probably me being more cautious.*' (P1, F)

'*No, I would never try and calculate that* [the creatinine clearance] … *so when I first started people on NOACs* [novel oral anticoagulants] *I got quite obsessed by looking at their eGFRs* [estimated glomerular filtration rate] *and I would do them really regularly but I got rather lax.*' (GP1, F)

Patient-centredness
GPs and pharmacists talked about the importance of involving patients in decisions about their medicines but said that most medication reviews were conducted outside of the consultation or hastily alongside several other problems being discussed. They argued that it was difficult to stop medicines without involving the patient.

Involving patients versus being time efficient. Interviewees tended to make the distinction between 'simple reviews', for example, younger patients prescribed a small number of medicines, and 'complex reviews', for example, frail older patients with multimorbidity and polypharmacy. More patient-centred medication reviews carried out in dedicated appointments were prioritised for more complex patients:

'*If they're more elderly and we're concerned*

about whether they're taking it or not, whether they're just stockpiling it, obviously yes we would look into that further, but if you've got a fit 60-year-old that's still working [laughs] they don't want to come in to discuss their medication ... amitriptyline, we might want to discuss ... depends on the drugs that they're on.' (GP1, F)

Due to high workload pressures and time constraints, interviewees reported that most medication reviews were conducted remotely, without involving the patient. Several GPs and pharmacists described the medication reviews as a 'tick box' exercise, which they did in the quickest way possible without involving the patient. Two GPs and most pharmacists argued that a 'proper' medication review required patient involvement and could not be done remotely:

'I just do it in the quickest way possible to say that I've done it ... I think quite often we don't involve the patient in the decision and part of that is because it is a hell of a lot quicker to just tell them to do it.' (GP1, F)

GPs who had good continuity of care with their patients argued that they applied their personal knowledge of patients, and their wishes, to the review:

'... it isn't a big practice and so there aren't many people who I don't know particularly when they're on that many sort of medications ... I know him ... and I know his wife and his daughter ... so I sort of know that actually that's ticking along fine ... well there's quite a lot of foundation of knowledge which goes into the medication review.' (GP8, M)

Involving patients in decisions to stop medicines. Most interviewees thought patients should be involved in decisions to stop their medicines. They argued that some patients were happy to accept the possible harms of certain medicines because they improved their quality of life, and others preferred to continue certain medicines despite there being little evidence of benefit:

'... it's a quality of life decision and incontinence is a horrible symptom, it's not going to kill anyone probably but it ruins people's life ... my job is to reduce suffering not necessarily to make people live that much longer ... they'd rather take something that might do them some harm but it means they can tolerate their lives more.' (GP7, F)

'... in fact I've had it where they remained on statins ... they wanted to take that and continue with it ... The cholesterol was quite low anyhow so I put it to her that as we get older it wasn't — the evidence isn't there for elderly patients and we have to weigh up risks and benefits and she was quite happy to stop the statin ... So yes I have had both ways.' (P6, F)

DISCUSSION
Summary
The authors found that GPs typically carried out medication reviews outside of the patient consultation or during 10-minute consultations alongside other problems. For some GPs, medication reviews were done *'in the quickest way possible to say that it was done'*, reflecting time constraints and competing priorities. Few of the practice-based pharmacists were routinely involved in medication reviews. There was a perception from GPs and pharmacists that pharmacists required protected time to undertake a medication review, and, though they were generally perceived to be more thorough than GPs, they were also felt to be less time efficient and had other competing priorities. GPs and pharmacists perceived a trade-off between involving the patient in decisions about their medicines and being time efficient, and this emerged as an important barrier to stopping medicines. Decisions to stop medicines were said to be patient dependent, with some patients preferring to accept the risk of harm from certain medicines, particularly those that improved their quality of life.

Strengths and limitations
Grounding the GP interviews using real patients as case studies was a key strength of this study, prompting a greater depth of discussion and highlighting differences between the way in which pharmacists and GPs carried out medication reviews. For example, the pharmacists tended to be more fastidious than GPs about checking and altering drug doses for patients with abnormal kidney blood tests. A further strength was that a range of views was captured, including those of practice-based pharmacists, CCG pharmacists, and community pharmacists. The iterative approach to the study design, whereby the topic guide was altered as new themes emerged from the data was also a strength. One limitation was that interviewees were recruited from practices involved in a trial; practices, the GPs, and pharmacists who take part in clinical trials may not be representative of all practices. For logistical

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reasons some interviews were conducted over the phone and the absence of non-verbal communication for these interviews is a limitation. It was outside the scope of this study to interview other health professionals involved in medication reviews, such as nurses, and to interview patients about their experiences of medication review.

Comparison with existing literature
A key finding of this study was that GPs and pharmacists recognised the importance of involving patients in medication reviews but, in practice, due to current high workload pressures, most medication reviews were conducted outside the consultation with no patient involvement, or hastily alongside several other problems with little patient involvement. This aligns with Hollnagel's idea of the 'efficiency and thoroughness trade-off' (ETTO) where, within the constraints of a high volume of work, it is not possible to be both efficient and thorough, and practitioners must trade one off against the other.[21]

GPs and pharmacists tended to categorise medication reviews as: being simple, for example, for younger patients prescribed a small number of medicines; or complex, for example, for frailer older patients with multimorbidity, polypharmacy, and(or) memory problems; arguing that simple reviews could be carried out quickly without involving the patient, but more complex reviews required more time and patient involvement. This is a pragmatic approach, which acknowledges that, due to current high demand, it is not possible to involve all patients in medication reviews, and prioritises those who are most likely to benefit — aligning with current NICE guidance.[15]

GPs and pharmacists appear to be making the assumption, however, that patients who were prescribed fewer medicines with fewer long-term conditions would benefit less from a discussion about their medicines.

Remote medication reviews can only assess adherence based on how often medicines are prescribed, but patients and community pharmacists may be requesting regular prescriptions that are not being dispensed or taken, which can lead to considerable medicine waste and associated poorer outcomes for the patient.[22,23] Direct contact between the patient and the reviewer also offers the opportunity to elucidate experiences of adverse events and determine if the patient is amenable to suggested changes.[24]

Though interviewees preferred to involve patients with more complex problems in a medication review, this tended to be done in the quickest way possible, often during a routine consultation alongside several other problems, so the extent of shared decision making between the patient and doctor is questionable. This does not align with NICE guidance, which puts a strong emphasis on involving patients and their families in decisions about their medicines, and on reducing medicine waste.[15]

Interviewees described several barriers to stopping medicines, including perceptions that this was not acceptable to some patients, a lack of clear guidance, not wanting to tread on the toes of hospital colleagues, a need to involve patients in decisions that were time consuming, and that stopping medicines often generated more work. These findings align with the results of a systematic review that explored prescribers' perceived barriers and enablers to minimise prescribing potentially inappropriate medicines.[25] As in the present study, the review described clinician inertia: where health professionals are aware of the potential harmful effects of certain medicines but, due to high workload pressures, choose to 'turn a blind eye', acknowledging that it was easier to continue medicines than to stop them. The key barriers to stopping medicines included disagreement between the patient and clinician about the appropriateness of stopping, a fear of withdrawal effects or symptom recurrence on stopping medicines, and GPs lacking time and knowledge to advise patients how to stop medicines safely.[26]

Implications for research and practice
Both the pharmacists and GPs described the 'ideal' scenario of a patient-centred medication review, whereby the clinician finds out what the patient is actually taking, shares concerns, and has an informative discussion about the pros and cons of continuing or stopping certain higher-risk medicines. In line with NICE guidance, they argued that frail older patients with multimorbidity, polypharmacy, and/or cognitive impairment should be prioritised. In practice, time constraints prohibited health professionals from truly involving patients in decisions about their medicines.

Although a patient-centred model of medication review appears to be a reasonable approach to reducing harmful polypharmacy, there is a lack of evidence that medication review, as currently practised, or in the 'ideal' form described,

actually improves clinical outcomes.[27] In practice, therefore, the pragmatic approach taken by practitioners in this study is not unreasonable, in that they sought to effectively ration the limited time available by focusing attention on patients at highest risk.

Further research is required to answer: first, which patients would benefit most from medication review; second, what are the important components of a review; third, which mix of health professionals should carry out medication reviews; and, fourth, whether medication review can improve clinical outcomes.

Further research is planned to triangulate the findings of this study by examining observational evidence (video consultations) of how medication reviews are carried out in practice, and the authors are in the initial stages of applying for research funding to examine such observational evidence.

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